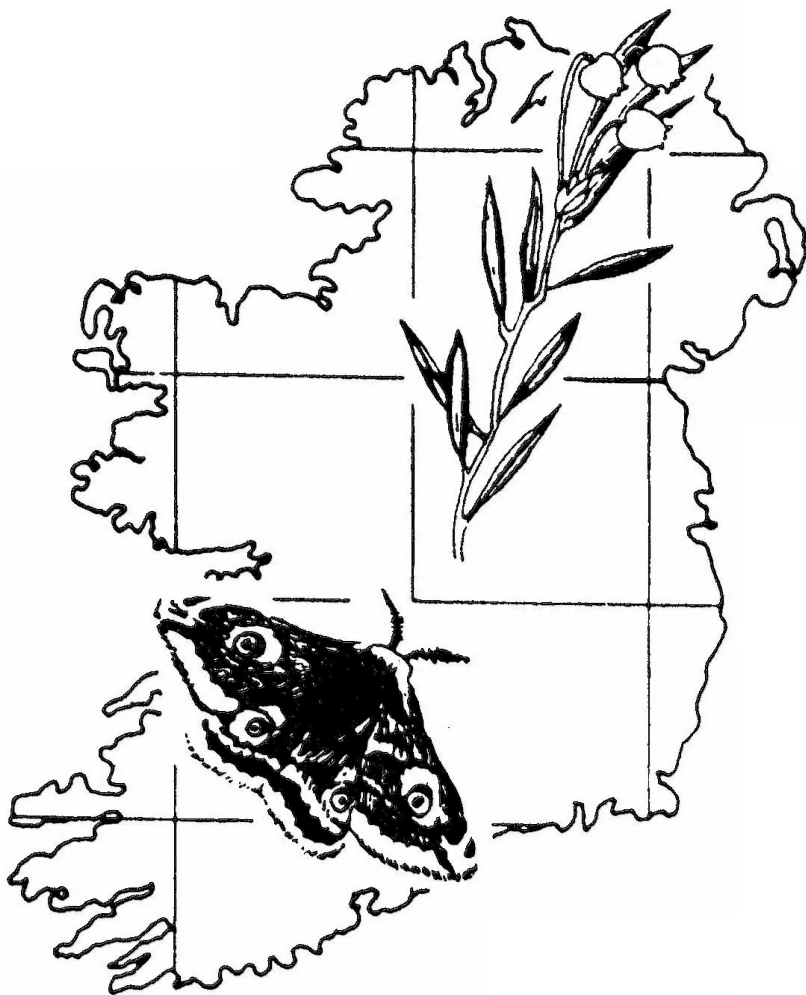


IRISH BIOGEOGRAPHICAL SOCIETY



WITH AN INDEX TO BULLETINS 1-48

THE 2025 COMMITTEE
of
THE IRISH BIOGEOGRAPHICAL SOCIETY

Chairman: Professor D. A. Murray, B.Sc., Ph.D.

Treasurer: J. Walsh, B.A.

Editor: J. P. O'Connor, B.Sc., Ph.D., MRIA.

Executive Members: Professor T. M. Bolger, B.Sc., Ph.D.; R. Dolan, B.C.L.; J. A. Good, B.A.(Mod.), Ph.D.; J. M. C. Holmes, B.A.(Mod.); W. A. Murray, B.Sc.

LIST OF SPONSORS

J. M. C. Holmes

Professor Cormac Kilty and Anne Kilty

J. P. O'Connor

The Department of Zoology, University College, Dublin

William Tracey and Sons

The National Parks and Wildlife Service of the Department of Housing, Local Government and Heritage



DEDICATION

This Bulletin is dedicated to the memory of Matt Murphy (1934-2025) and Michael Viney (1933-2023).

Bulletin of The Irish Biogeographical Society
Number 48

Copyright © The Irish Biogeographical Society, Dublin

ISSN 0032-1185

Abbreviation: *Bull. Ir. biogeog. Soc.*

Editor: J. P. O'Connor

DATE OF PUBLICATION: 18 July 2025

The Irish Biogeographical Society desires it to be understood that it is not answerable for any opinion, representation of facts, or train of reasoning that may appear in the following papers. The authors of the various articles are alone responsible for their contents and for the correctness of references.

Data Protection Information

Members and Sponsors are hereby informed that non-sensitive personal data is held digitally by the committee solely for the purposes of recording subscriptions and the issuing of the Society's publications and notices.

Enquiries concerning the Bulletin may be sent by e-mail to the Treasurer Mr John Walsh at <ampersandwalsh@gmail.com>.

BULLETIN OF THE IRISH BIOGEOGRAPHICAL SOCIETY

Number 48

CONTENTS

Editorial.....	1
New publication. <i>A World Catalogue of Chironomidae (Diptera) Part 4. Fossil Chironomidae</i>.....	2
Notes on a new groundplan hypothetical Diptera wing	
†Patrick Ashe and James P. O'Connor.....	3
Annotated checklist of saproxylic Coleoptera in the counties of Northern Ireland	
Roy Anderson.....	24
New records of Irish sponge flies (Neuroptera: Sisyridae)	
J. P. O'Connor and M. A. O'Connor.....	98
A checklist of the butterflies and moths (Lepidoptera) of County Waterford	
Anthony Bryant.....	107
Notes on the grey silverfish <i>Ctenolepisma longicaudatum</i> Escherich, 1905 (Zygentoma; Lepismatidae) in Ireland	
J. P. O'Connor.....	154
Records of Irish caddisflies (Trichoptera) including <i>Oecetis testacea</i> (Curtis, 1834) new to Northern Ireland	
James P. O'Connor, Hugh B. Feeley, Anthony Bryant, Pascal Sweeney, Rodney Monteith, John T. Brophy and Ryan Mitchell.....	158
<i>Nais communis</i> Piguet, 1906 (Oligochaeta: Naididae), microhabitat and occurrence in southern Ireland	
Pascal Sweeney.....	176
Records of Trichoptera collected for the biomonitoring of Ireland's lake network 2022-2024	
Ruth Little and James P. O'Connor.....	183
New Irish caddisfly (Trichoptera) records mainly from the EPA Rivers Survey (2007-2018) and Bioblitz	
James P. O'Connor.....	191
Records of stoneflies (Plecoptera) from Ireland in 2024	
Hugh B Feeley, Helen M. Barber-James, Bryan Kennedy, David McGrath, Ryan Mitchell, Stewart Rosell, Amy Weir and Jan-Robert Baars.....	210

CONTENTS (continued)

An annotated checklist of <i>Carex</i> L. (sedge) species in Co. Meath (H22), Ireland	
<i>Margaret Norton</i>	228
The staphylinid and carabid (Coleoptera) fauna of a restored <i>Molinia-Juncus acutiflorus</i> grassland in Co. Cork, Ireland	
<i>Jervis A. Good and Fidelma T. Butler</i>	246
First records of <i>Corynoneura lobata</i> Edwards, 1924 and <i>Micropsectra lindrothi</i> Goetghebuer, 1931 in County Kildare and of <i>Cricotopus sylvestris</i> (Fabricius, 1794) in hydrometric area 8, Ireland (Insecta: Diptera, Chironomidae)	
<i>Declan A. Murray</i>	264
Replacement names for three species of <i>Chironomus</i> Meigen (Diptera, Chironomidae)	
<i>Declan A. Murray and James P. O'Connor</i>	267
First Irish records of the seed-beetle <i>Harpalus (Amblystus) honestus</i> (Duftschmid, 1812) (Coleoptera: Carabidae) from Skellig Michael, Páirc Náisiúnta na Mara, Co. Kerry	
<i>Myles Nolan</i>	270
The vouched, the unvouched and a digital phantom; four spiders (Araneae) published for, but not occurring in Ireland	
<i>Myles Nolan and Sylvia Voss</i>	280
Life along the stream – a love story; caddisflies could take a prize for their variation of species	
[Review: <i>A catalogue and atlas of the caddisflies (Trichoptera) of Ireland</i>]	
† <i>Michael Viney</i>	287
Index to <i>Bulletins</i> 1-48 of the Irish Biogeographical Society	
<i>James P. O'Connor</i>	289
Notices	325
Memories	326

Editorial

This *Bulletin* is a treasure trove of information on the fauna and flora of Ireland with numerous new records. Topics range from the sedges (*Carex*) of County Meath to the discovery of a small commensal oligochaete worm living in caddis cases. The volume concludes with an index to *Bulletins 1-48*. Key words are shown in bold in the titles of the papers.

PDFs of *Bulletins 1-47*, all the *Macro Series*, *Occasional Publications 1-14* and *Electronic Occasional Publications 1-2* can now be downloaded from the Society's website <www.irishbiogeographicalsociety.com>. They can also be downloaded from Trinity College Library's edepositIreland <<http://edepositireland.ie/>>. This volume (**48**) will be uploaded after publication. Publications and depositories are listed after p. 326 (added in this digital copy).

Occasional Publication Number 15 was published on the 15 October 2024. Entitled *A World Catalogue of Chironomidae (Diptera) Part 4. Fossil Chironomidae*, full details are given overleaf. In due course, a PDF of this publication will be uploaded to the above sites where Parts 1 and 2 are already available. Part 3 is nearing completion and will be published on line as *Occasional Electronic Publication Number 3* in 2025.

This year's *Bulletin* is dedicated to the memory of Matt Murphy (1934-2025) and Michael Viney (1933-2023). Both were great supporters of the Society. Matt was a passionate environmentalist and founder of the Sherkin Island Marine Research Station. An obituary appeared in the Irish Independent <<https://www.independent.ie/irish-news/obituary-matt-murphy>>. Michael was a nature writer, illustrator, journalist and long-time Irish Times columnist. His Another Life column began in 1977 and often promoted the work of the Society. The poise and sensitivity he brought to his reportage would later mark his writing on the natural world. An example of one of his IBS reviews is republished in this *Bulletin*. An obituary can be read at <<https://www.irishtimes.com/obituaries/2023/05/30/michael-viney-obituary-a-life-of-self-sufficiency-and-curiosity-in-irelands-wild-west/>>.

I have been the Society's Editor for over four decades but having now reached seventy seven years of age, it is time for me to retire after the publication of this *Bulletin* and the next *Occasional Electronic Publication*. Being Editor has been a very enriching experience and I have greatly enjoyed the work. It was very exciting to see so many interesting and diverse manuscripts being submitted for publication. I wish my successor as much fulfilment as I have had. I will look after the posting of this volume to members and institutions. I will then carry out the 2025 updating of our website with my son Kevin O'Connor who is our webmaster. I wish to thank the Society's members, the Committee (past and present), the authors, referees and sponsors for their support over the years. I am also very grateful to the staff of our printers (Fodhla Printers and later Grehan Printers) for their efficiency, kindness and help.

James P. O'Connor,
Editor, 1 July 2025

NEW PUBLICATION

A World Catalogue of Chironomidae (Diptera) Part 4. Fossil Chironomidae

by Patrick J. Ashe, Declan A. Murray and James P. O'Connor.

Occasional Publication **Number 15** of the Irish Biogeographical Society. Published 15 October 2024. 244 pages. ISBN 978-1-9164218-4-4.



Part 1 of the *World Catalogue* was completed in 2009 and Part 2 in 2012. Nomenclature and distribution information are provided for 343 species-level fossil taxa of Chironomidae. Details are given for 190 species-level taxa (151 described and 39 undescribed) in 107 genera (46 fossil and 61 extant) in ten of the thirteen recognized subfamilies. Location details for known fossil species types, as cited in original publications, are given by zoogeographical region. A comprehensive bibliography of relevant publications is provided with actual dates of publication where possible.

Copies of this publication may be obtained by e-mailing the Editor Dr J. P. O'Connor <joconnor@museum.ie>. Price €20 including postage.

NOTES ON A NEW GROUNDPLAN HYPOTHETICAL DIPTERA WING

†Patrick Ashe¹ and James P. O'Connor²

¹deceased 19 June 2022.

²*Emeritus Entomologist, National Museum of Ireland - Natural History, Merrion Street, Dublin 2, D02 F627, Ireland.*

e-mail: <joconnor@museum.ie>

Abstract

The Chironomidae is now recognised as the most basal and oldest known family in the Culicormorpha. The wing venation is the most recent chironomids may in some respects appear simplified, when compared to some other culicomorphan families (e.g. Dixidae, Chaoboridae), which does not reflect its true basal position. However, when a broad spectrum of Chironomidae are examined, ranging from the oldest fossils (†Aenneinae) and including both extant basal and more recently evolved subfamilies, it is evident that the wings show much greater variation than is found in any other family of Culicormorpha or even in any single family of Diptera. The venation within the Culicormorpha shows considerable variation between the different families. By examining the groundplan hypothetical Diptera wing and comparing it with features present in the wings of oldest known fossil adult culicomorphan (†Aenneinae – Chironomidae), other Chironomidae and in other seven extant families it is possible to produce a groundplan hypothetical Culicormorpha wing.

Key words: Diptera, Chironomidae, Culicormorpha, fossil, groundplan, hypothetical wing.

Introduction

In the nematocerous and higher Diptera one of the most significant structural features used in determining relationships between and within families is the wing venation. It is important therefore, in order to make proper comparisons, that the names and abbreviations used for the different wing components (veins, cells, etc.) are consistent and correctly applied across the whole Order Diptera and to the outgroup, the Order Mecoptera, from which the earliest Diptera evolved. The wing terminology and abbreviations used are given in Appendix 1 and the colour coding of the wing venation in Appendix 2.

In the adult morphology and terminology chapter (McAlpine, 1981, Fig. 2.67) in the *Manual of Nearctic Diptera* the groundplan hypothetical primitive Diptera wing is illustrated and labelled with abbreviations showing all the different veins, cells and other structures (Fig. 1). However, there are problems with this “ground-plan hypothetical Diptera wing” because it is based on wings of two extant species (McAlpine, 1981, Figs 4.1, 4.2) of the families Tanyderidae (*Protoplasia fitchii* Osten Sacken) and Psychodidae (*Pericoma marginalis*

(Banks)). Some of the components on this wing are not primitive or basal in origin because these two modern streamlined wings have already been subjected to 250 million years of evolution. Changes proposed in the wing vein terminology, see Saigusa (2006) heading below, mean that the McAlpine groundplan wing no longer has two anal veins but only one (**A₁**) because “**A₁**” = **CuP** and “**A₂**” = **A₁** and the wings of *P. fitchii* and *P. marginalis* have no anal veins because what is labelled “**A₁**” is actually **CuP**. The groundplan Diptera wing should have three anal veins and a U-shaped Cubital Fork as in the Diptera-like Mecoptera. It is therefore necessary to produce a new groundplan hypothetical Diptera wing based in part on Saigusa (2006) and a comparison between the wings of the oldest known fossil Diptera, extant basal Diptera and fossils of the Diptera-like Mecoptera (Fig. 2).

Saigusa (2006) (Fig. 3)

During the 6th International Congress on Dipterology (in Fukuoka, Japan), Saigusa (2006) distributed to all delegates a privately published paper entitled *Homology of wing venation of Diptera* (now freely available online) revising the wing terminology of Diptera and resolving conflicting opinions relating in particular to the posterior veins including part of the Medial, Cubital and Anal veins. The changes proposed by Saigusa (2006) included: confirmation that the vein **CuA₁** of McAlpine (1981) is **M₄** [Note: except in Diptera which have lost **M₄** – i.e. in most basal and higher Diptera it is **M₃₊₄** – see next paragraph]; and **CuA₂** is now **CuA**; the “vein” labelled **CuP** (of McAlpine 1981) is not a true vein but a **Pseudovein**; that **A₁** is now **CuP**; and that **A₂** is now **A₁** – the names of the corresponding cell names are also affected and changed. These changes are clearly identified in Saigusa (2006, Fig. 8A) and can be easily compared with the outdated McAlpine figure reproduced in Saigusa (2006, Fig. 8B) (Fig. 2)

Note that **CuA₁** of McAlpine (1981) is not always **M₄** as indicated in Saigusa (2006) – it only applies to the modified McAlpine ground-plan wing given in Saigusa (2006, Fig. 8A) and to various mostly basal Diptera where **M₄** is retained (e.g. Tanyderidae, many Tipulidae, Pachyneuriidae, Psychodidae, Pelecorhynchidae, Tabanidae). In the majority of Diptera separate **M₃** and **M₄** veins are lost and instead what remains is a single fused **M₃₊₄** vein (e.g. all Culicomorpha families, Deuterophlebiidae, Axymyiidae, Bibionidae, Mycetophilidae, Sciaridae, Ptychopteridae, some Tipulidae).

Saigusa (2006: 3) says “In addition to the extreme reduction of crossveins, the presence of CuP and reduced number of anal veins (less than 3) have been considered the most fundamental autapomorphies in the wing venation of the order Diptera and some of the most important characters in discussing the origin of the Diptera”. This is no longer the case for **CuP** or the number of anal veins because in Mecoptera **CuP** is present (Saigusa, 2006, Fig. 3A) and there are three Anal veins (**A₁**, **A₂** and **A₃**) in his modified groundplan Diptera wing (Saigusa, 2006,

Fig. 8A). However, two of these Anal veins (**A₂** and **A₃**) are very short and in a very basal position on the wing because Saigusa used what he found and illustrated in the wings of an extant Diptera (*Trichocera* sp.) and an extant Mecoptera (*Bittacus* sp.) and believed that (*op. cit.*, p. 9) “the ancestors of the Diptera had proximally narrowed forewings”. We believe that in the earliest Diptera the wings were not proximally narrowed but broader as in †*Grauvogelia* and the Diptera-like Mecoptera. Therefore, all three Anal veins in the earliest Diptera would have been well developed and elongate and that **A₂** and **A₃** would not have been restricted to a very basal position. In the *Manual of Afrotropical Diptera* chapter on ‘Adult morphology and terminology’ (Cumming and Wood, 2017: 111) under **anal vein**, they state that “Wootton and Ennos (1989) and Saigusa (2006) essentially recognise only one anal vein (**A₁**) in the groundplan of Diptera”. This is incorrect at least for Saigusa (2006, Fig. 8A) where his groundplan wing clearly shows the presence of three anal veins. Saigusa (*op. cit.*, p. 9, points 4 and 5 respectively) also clearly states in the text that “(true vein **A₂**) . . . is retained in many groups of Diptera” and “True vein **A₃** appears as a remnant in some Diptera”.

Saigusa (2006) also states that there is a considerable loss in the number of crossveins in Diptera compared to Mecoptera. A **Pseudovein** in the earliest Diptera is probably associated with the presence of fewer crossveins basally. The **Pseudovein**, which Saigusa (2006) calls (p. 9) “the sclerotised ridge behind CuA” and (p. 24) “a thickened cuticular line (pseudovein)” is not present in Mecoptera but is an autapomorphy for and would have been present in the earliest Diptera.

At the 8th International Congress on Dipterology (2016 in Potsdam, Germany) the accepted position for chapters in the then forthcoming *Manual of Afrotropical Diptera* was that all authors would use the older and partially outdated wing terminology first given in the *Manual of Nearctic Diptera* (McAlpine, 1981) which was little changed apart from a few slight modifications in *Contributions to a Manual of Palaearctic Diptera* (Merz and Haenni, 2000) and in the *Manual of Central American Diptera* (Cumming and Wood, 2009). In Potsdam, the senior author lobbied delegates that, for the *Manual of Afrotropical Diptera*, the wing terminology proposed by Saigusa (2006) should be adopted in recognition of the accepted fact that the Mecoptera are the outgroup for the Diptera. By the end of the Potsdam conference it was agreed that all prospective authors of the *Manual of Afrotropical Diptera* would use the revised newer terminology. However, in the adult morphology and terminology chapter in the *Manual of Afrotropical Diptera* the crossvein labelled as “**m-cu**” in Cumming and Wood (2017, Fig. 43a) is incorrect – what is labelled is **not** the crossvein but merely the base of **M₄** – the real **m-cu** is correctly indicated and labelled in McAlpine (1981, Fig. 2.67), Merz and Haenni (2000, Fig. 47) and Saigusa (2006, Fig. 8A) but is incorrectly labelled as “**bm-cu**” in Cumming and Wood (2009, Fig. 43).

The Cubital Fork

It has recently become generally acceptable in Diptera that the “cubital fork” includes both a medial component (the anterior branch) and a cubital component (the posterior branch). The anterior branch of the “cubital fork” is somewhat variable and may comprise **M₄+part of M₃₊₄** or consist only of **M₃₊₄** (in most extant Diptera) or consist only of **M₄** (found in some extant Diptera; more common in older basal fossil nematocerous Diptera). The posterior branch of the “cubital fork” is the distal part of **CuA** for which we use the abbreviation **CuA_d**. Although this fork includes both a medial and a cubital component it is not necessary to change its name and the term “cubital fork” (**CuFk**) is retained.

A change proposed in Ashe *et al.* (2018), which is elaborated in greater detail here, that appears not to have been recognized before, is that the **Cubital Fork (CuFk)** occurs as two distinct types. It can be either: *U-shaped Cubital Fork (U-sCuFk)* (Fig. 4) or *V-shaped Cubital Fork (V-sCuFk)* (Fig. 5).

(1) U-shaped Cubital Fork (U-sCuFk) (Fig. 4)

An **U-shaped Cubital Fork (U-sCuFk)** consists of the anterior branch (**M₄+part of M₃₊₄** / or **M₄** / or **M₃₊₄**) + the crossvein (**m-cu**) + the posterior branch (**CuA_d** – the distal part of **CuA**). The presumed plesiomorphic condition in basal Diptera (e.g. Krzemiński and Krzemińska, 2003, Fig. 1G, †*Grauvogelia*) is: **M₄+part of M₃₊₄** + **m-cu** + **CuA_d** – the same condition is found in some Diptera-like Mecoptera with four medial branches, e.g. *op. cit.*, Figs 1C, 1E). In some basal Diptera where **M₄** is retained the U-shaped Cubital Fork may consist of either: (a) **M₄+part of M₃₊₄** + **m-cu** + **CuA_d** or (b) **M₄** + **m-cu** + **CuA_d**. In those Diptera with a U-shaped Cubital Fork where a separate **M₄** is lost and only a fused **M₃₊₄** vein remains the fork components are: **M₃₊₄** + **m-cu** + **CuA_d** – this is found in some basal Chironomidae (e.g. †*Aenneinae*, *Afrochilus* Freeman).

In the outgroup Mecoptera with dipteroid venation illustrated in Krzemiński and Krzemińska (2003) the cubital fork is **U-shaped** but is more variable, especially in relation to the medial branch component which can be formed by the base of either **M₄**, or **M₄+part of M₃₊₄** or **M₆+part of M₅₊₆**. Examples of these Mecoptera with dipteroid venation are: **M₄** + **m-cu** + **CuA_d** (*op. cit.* Figs 1D, 1F); **M₄+part of M₃₊₄** + **m-cu** + **CuA_d** (*op. cit.* Figs 1C, 1E); or **M₆+part of M₅₊₆** + **m-cu** + **CuA_d** (*op. cit.* Figs 1A-B). **Note** that **M₅**, **M₆** and **M₅₊₆** do **not** occur in Diptera.

(2) V-shaped Cubital Fork (V-sCuFk) (Fig. 5)

A **V-shaped Cubital Fork (V-sCuFk)** consists of two components: the anterior branch (**M₃₊₄**) + the posterior branch (**CuA_d** – the distal part of **CuA**) together forming a V-shaped fusion point where they meet while the crossvein component is lacking. This is the apomorphic (advanced or derived) condition found in the majority of Diptera which have only **M₃₊₄** and **no**

Discal cell. It occurs in most Chironomidae (except some basal taxa).

In those Diptera which possess both a Discal cell + a separate M_4 vein or a Discal cell + a fused M_{3+4} vein there is no evidence that a V-shaped Cubital Fork exists or has yet evolved. However, in the wings of some extant Diptera there is an indication that evolution towards a V-shaped Cubital Fork may eventually happen

Crossvein(s) between the Media (M) and the Anterior Cubitus (CuA)

Note also that when there are two clearly defined crossveins between **M** and **CuA** the anterior crossvein is called **bm-m** and the posterior crossvein is **m-cu**.

Changes to the terminology of the crossvein “**m-cu**” are also proposed here because between the Media (**M**) and the Anterior Cubitus (**CuA**) there can be (i) two distinct crossveins (an anterior and a posterior crossvein) or (ii) one distinct crossvein. It is not appropriate to only use “**m-cu**” for both alternatives above.

(i) Two distinct crossveins. For the anterior crossvein we use the abbreviation **bm-m** (= basal medial-medial crossvein) – this crossvein originates in **M** (or more rarely in M_{1+2}) and terminates in M_{3+4} or M_4 . In those Diptera with a Discal cell the **m-m** crossvein forms the anterior boundary/closure of the cell and logically the **bm-m** crossvein must form the basal boundary/closure of the cell. Note that the **bm-m** crossvein is frequently retained when the discal cell is lost. While **bm-m** functions as a crossvein the same piece of vein has a separate function – it is also part of the Media (usually part of the base of M_{3+4}) and therefore forms a direct connection back to **M** for M_{3+4} .

For the posterior crossvein we use the abbreviation **m-cu** (= medial-cubital crossvein) which originates at the junction where the apical part of **m-cu**, the basal part of **bm-m** and the base of a Medial branch (M_{3+4} or M_3 or M_4) all meet. The basal part of **m-cu** terminates in **CuA**. When both crossveins (**bm-m** and **m-cu**) are present the formation of the base of the cubital fork is always distinctly U-shaped.

(ii) One distinct crossvein. When only a single crossvein remains between **M** and **CuA** it must be called **bm-cu** (= basal medial-cubital crossvein) because it is the result of fusion (between **bm-m** and **m-cu**) and the two crossveins are no longer distinguishable from one another. This fusion causes the loss of the respective “-m” component in **bm-m** and the “-m-” component in **m-cu**. The **bm-cu** crossvein originates in **M** (or more rarely in M_{1+2}) and terminates in **CuA**. When only one crossvein (**bm-cu**) is present the formation of the cubital fork is distinctly V-shaped which consists of only two components, the anterior component is formed by the base of M_{3+4} while the posterior component is formed by the base of **CuA**. Note that the **bm-cu** crossvein does not form part of the V-shaped Cubital Fork.

Evolution of the cubital fork

(i) Diptera without a Discal cell but with vein M_{3+4} . (Fig. 6)

It is necessary to explain how, in those Diptera without a Discal cell, vein M_{3+4} migrates from being an integral part of the Media vein complex to fuse with and become an integral part of the Anterior Cubitus (**CuA**). This migration occurs in a series of evolutionary steps which are explained as follows.

Step 1. This is the starting point where the base of M_{3+4} is positioned between the bottom of crossvein **bm-m** and the top of crossvein **m-cu**. In the illustrated example, **bm-m** is vertical and **m-cu** is at an acute angle. The junction point where M_{3+4} , **bm-m** and **m-cu** all meet would represent the bottom left corner of the Discal cell if a Discal were present. The Cubital Fork is distinctly **U-shaped** (formed by $M_{3+4} + m-cu + CuA_d$).

Step 2. The base of M_{3+4} is starting to slide down crossvein **m-cu** towards **CuA**. The evolutionary process is gradual as M_{3+4} gets closer and closer to **CuA**. Both crossveins **bm-m** and **m-cu** are clearly distinguishable from one another. The Cubital Fork is still distinctly **U-shaped**.

Step 3. The two crossveins **bm-m** and **m-cu** are no longer distinguishable and have fused together to form a single **bm-cu** crossvein between **M** and **CuA**. The base of M_{3+4} has now fused with **CuA** to form a **V-shaped Cubital Fork** ($M_{3+4} + CuA_d$). The bottom of the **bm-cu** crossvein is also located at the fusion point between M_{3+4} and **CuA**.

Step 4. After M_{3+4} has fused with **CuA** the crossvein **bm-cu** remains mobile. The **bm-cu** crossvein can: (a) move to a more proximal position away from the fusion point to terminate in **CuA_p** (Step 4a) or move to a more distal position away from the fusion point to ride up onto and terminate in M_{3+4} (Step 4b). The crossvein remains mobile in order not to impede any future evolutionary flight potential or wing development. A crossvein fixed permanently in the wrong position, such as a part of the wing which should be flexible, would instead create a stiff point that would impede flight. The position of the **bm-cu** crossvein on the wing can be quite variable between genera within a family (near the wing base, intermediate, or more distal) but among species within a genus the position is generally quite similar with mostly only slight variation.

Step 5. The final stage is the complete loss of the **bm-cu** crossvein. There is no indication, without the evolutionary scenario detailed above, to explain how M_{3+4} managed to move from the Medial sector to the Cubital sector and form the anterior branch of the Cubital Fork .

(ii) Diptera with a Discal cell and with either vein M_4 or M_{3+4} . (Fig. 7)

In those Diptera with a Discal cell and either M_4 or M_{3+4} there is some evidence of a partial evolutionary scenario which is incomplete and has yet to completely evolve. In the McAlpine (1981, Fig. 2.67) version of the groundplan Diptera wing it has both a Discal cell and “**CuA₁**” [= M_4] is fused with and forms a **V-shaped Cubital Fork** with “**CuA₂**” [= **CuA**]. In the

modified McAlpine groundplan wing in Saigusa (2006, 8A) there is a significant change because it now has a **U-shaped Cubital Fork** – in this figure **M₄** has moved away from the Discal cell and has travelled down the anterior part of **m-cu** by about one fifth the length of the crossvein. The basal condition in Diptera shows **M₄** attached to the bottom of the Discal cell (Fig. 2) while that figured in Saigusa is close to what we call Step 3 (Fig. 3). The following are the evolutionary steps which have so far occurred and are explained as follows.

Step 1 (Fig. 7.1). This is the starting point where the base of **M₄** or **M₃₊₄** is positioned at or close to the mid-point on the bottom of the Discal cell. In the following text and figures we only use **M₄** as the example to avoid confusion but the same scenario can also occur if there is only a fused **M₃₊₄** vein. In the illustrated example (Fig. 7.1) there are two crossveins between **M** and **CuA**: (i) **bm-m** forms the basal closure of the Discal cell and is at an obtuse angle where it connects to vein **M** and (ii) **m-cu** connects to **CuA** at an obtuse angle. The junction point where **bm-m** and **m-cu** meet one another forms an obtuse angle. The Cubital Fork is distinctly **U-shaped** (formed by **M₄**+**part of M₃₊₄** + **m-cu** + **CuA_d**).

Step 2 (Fig. 7.2). The base of **M₄** has moved to the baso-posterior corner of the Discal cell at the same junction point where **bm-m** and **m-cu** meet. The position of the two crossveins (**bm-m** and **m-cu**) relative to each other remains the same. The Cubital Fork is distinctly **U-shaped** (formed by **M₄** + **m-cu** + **CuA_d**).

Step 3 (Fig. 7.3). The base of **M₄** has move away from the junction with the two crossveins on the corner of the Discal cell and has started sliding down crossvein **m-cu** towards **CuA**. Both crossveins **bm-m** and **m-cu** are clearly distinguishable from one another but as **M₄** slides down towards **CuA** it bisects the **m-cu** crossvein in two parts. The Cubital Fork is distinctly **U-shaped** (formed by **M₄** + **part of m-cu** + **CuA_d**).

Step 4 (Fig. 7.4). This is essentially the same as **Step III** except that **M₄** is closer to **CuA** while other features remain the same. Among extant Diptera with a Discal cell there appears to be none that have yet evolved where **M₄** fuses with **CuA** to form a **V-shaped Cubital Fork** (Fig. 7.5). Thus **Step 4** appears to be the point that the evolutionary scenario has reached. Future possibilities are shown in Fig 7. (steps 6A and 6B).

The oldest known fossil adult Diptera, mostly wing compressions, are from the Middle Triassic of France, *circa* 240 Mya (Krzemiński and Krzemińska 2003). In one of these, †*Grauvogelia arzvilleriana* Krzemiński, Krzemińska & Papier, the wing is illustrated and labelled (Krzemiński and Evenhuis, 2000, Fig. 14.8) and a colour coded version of the same wing in Krzemiński and Krzemińska (2003, Fig. 1G) clearly shows that **M** has four branches (**M₁** to **M₄**) and **Cu** [= **CuA**] is a single vein. However, in the wing figures of †*Grauvogelia* there is no indication of the presence of either the **Pseudovein** or **CuP**. A **Pseudovein** should be present but may be too close to **CuA** to be separated from the latter or may not be discernable

due to poor preservation on the fossil. In all the Diptera-like Mecoptera figured in Krzemiński and Krzemińska (2003) **CuP** is present. However, it is difficult to imagine that the presence of **CuP** could have been missed in †*Grauvogelia* and we therefore presume that the vein labelled as “**A₁**” must be **CuP** and that labelled “**A₂**” must be **A₁**, while just above **A₁** there is a very short unlabelled vein terminating in the wing margin which must be **A₂**. Using colour coding for the veins (Krzemiński and Krzemińska, 2003, Fig. 1) show the origin of the venation in Diptera from the Mecoptera and use the same terminology for both insect orders. We have taken the wing of †*Grauvogelia* and used it with some modifications, by examining wing figures of Diptera-like Mecoptera as well as basal and fossil Diptera, to create a new template for the hypothetical ground-plan Diptera wing (Fig. 8).

Groundplan hypothetical Culicomorpha wing (Fig. 8)

The Chironomidae is now recognised as the most basal and oldest known family in the Culicormorpha (Ashe and O’Connor, 2012; Borkent, 2012). The wing venation is the most recent chironomids may in some respects appear simplified, when compared to some other culicomorphan families (e.g. Dixidae, Chaoboridae), which does not reflect its true basal position. However, when a broad spectrum of Chironomidae are examined, ranging from the oldest fossils (†Aenneinae) and including both extant basal and more recently evolved subfamilies, it is evident that the wings show much greater variation than is found in any other family of Culicomorpha or even in any single family of Diptera.

The venation within the Culicomorpha shows considerable variation between the different families. By examining the groundplan hypothetical Diptera wing (Fig. 8) and comparing it with features present in the wings of oldest known fossil adult culicomorphan (†Aenneinae – Chironomidae), other Chironomidae and in other seven extant families it is possible to produce a groundplan hypothetical Culicomorpha wing (Fig. 8). These features are:-

(i) **Costa**. A continuous **Costa** surrounding the entire wing margin but strongest and thickest on the anterior margin is the plesiomorphic condition in Diptera and in the earliest Culicomorpha.

Within the Culicomorpha a continuous **Costa** is retained in all four families of the Superfamily Culicoidea (i.e. Dixidae, Culicidae, Chaoboridae and Corethrellidae).

In three of the remaining four Culicomorpha families of the Superfamily Chironomoidea the **Costa** is not continuous beyond the wing apex, ending at or extending a little beyond the apex of R_{4+5} , leaving the hind margin of the wing membranous – this is the apomorphic condition which is found in the families Chironomidae, Ceratopogonidae and Simuliidae. An exception is the Thaumaleidae in which the **Costa** encircles the hind margin of the wing to some degree (Wood and Borkent in McAlpine and Wood (1989: 1359)).

(ii) **Subcosta**. Long, well developed and terminating in the costa (on the anterior wing margin).

(iii) **Radius**. With four branches (**R₁**, **R₂**, **R₃** and **R₄₊₅**) of which at least three, with the possible exception of **R₂**, terminate in the wing margin. There is some evidence from fossil Chironomidae (†*Aenne*) and Dixidae (†*Syndixa* Lukashevich) and extant Chironomidae (most Tanypodinae) and some basal Ceratopogonidae (†*Lebanoculicoides* Szadziewski as figured in Borkent 2019: Fig. 3D) that **R₂** terminating in **R₁** is the plesiomorphic condition in Culicomorpha. The elongation and narrowing of the wings in extant Dixidae, Corethrellidae, Chaoboridae and Culicidae probably caused **R₂** in the ancestors of these families to separate from **R₁**, with **R₂** becoming more elongate and parallel to **R₃** and **R₄₊₅** with all three veins terminating in the wing margin.

(iv) **Media**. With three branches (**M₁**, **M₂** and **M₃₊₄**) all of which reach the wing margin. In all extant culicomorphan families (except Chironomidae) **M₁**, **M₂**, and **M₃₊₄** are retained whereas in all described fossil and extant Chironomidae only two veins **M₁₊₂**, and **M₃₊₄** are present which extend towards but may or may not reach the wing margin.

(v) **Anterior Cubitus (CuA)**. The **Anterior Cubitus** (including the anterior **CuA** portion) is well developed and terminates in the wing margin.

(vi) **Pseudovein**. A weak vein-like fold, more or less parallel and close to the **Anterior Cubitus (CuA)** for most of its length, which was previously wrongly believed to be the posterior cubitus vein.

(vi) **Posterior Cubitus (CuP)**. The first true vein below the **Anterior Cubitus**. It was previously confused with the **Pseudovein** and in many published works is wrongly labelled as the first anal vein (**A₁**). The Posterior Cubitus terminates in the wing margin.

(vii) **Anal**. With three veins (**A₁**, **A₂** and **A₃**) of which at least one (**A₁**) reaches the wing margin but with **A₂** and **A₃** possibly weaker apically and stopping short of the margin (Fig. 8).

Although three anal veins are apparently not known to occur in any extant or fossil Culicomorpha we expect that in the ground-plan there would have been three veins. Evidence for at least two anal veins (within the Culicomorpha) is found in some extant Chironomidae (e.g. *Heptagylia* Philippi, *Murraycladius* Ashe & O'Connor) both of which phylogenetically belong to more apomorphic subfamilies.

(viii) **Cubital Fork (CuF)**. Within most Culicomorpha, the presence of a distinctly V-shaped cubital fork (formed by the fusion of **M₃₊₄** and **CuA**) and the presence of a single crossvein (**bm-cu**) is regarded as the apomorphic condition. The plesiomorphic state is the presence of a distinctly U-shaped cubital fork and two crossveins (**bm-m** and **m-cu**) in some basal fossil chironomids (e.g. †*Aenne*) and in the extant families Dixidae and Corethrellidae. These two crossveins are: (a) the anterior crossvein (**bm-m**) which is vertical and connects **M** (or **M₁₊₂**) to

M_{3+4} and (b) the posterior crossvein (**m-cu**) which forms an oblique angular connection between M_{3+4} and **CuA**. There is no evidence to indicate that a discal cell has every existed within the Culicomorpha but its presence in the very earliest members of the infraorder cannot be ruled out.

(ix) **Crossveins.**

In some extant Chironomidae, of which the clearest example is found in the genus *Afrochlus* Freeman (subfamily Podonominae), both crossveins are clearly present and the cubital fork is distinctly U-shaped. There are other examples, especially among the more primitive subfamilies (e.g. Podonominae, Tanypodinae, Diamesinae), where both crossveins are sometimes clearly present but in others it is indistinct due to considerable shortening of the **m-cu** crossvein as M_{3+4} approaches the fusion point with **CuA** – in such cases the cubital fork is still distinctly U-shaped. Previous authors apparently treated wings displaying the two crossveins among extant species as an anomaly usually without any comment or explanation or treated the entire two crossvein complex as representing a single “m-cu” crossvein.

However, the presence of the two crossveins and a **U-shaped Cubital Fork** is much more common in chironomid fossils, particularly in basal subfamilies, e.g. †Aenneinae, †*Dungeyella* (Buchonomyiinae).

FIGURE 1. The groundplan hypothetical primitive Dipter wing according to McAlpine (1981).

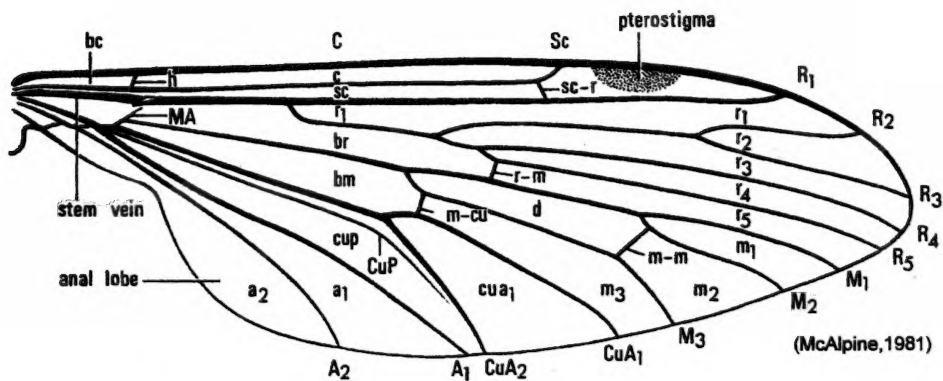


FIGURE 2. Fossil wing of *Prochoristella megaloprepia* (Mecoptera) from the Upper Permian of Australia (From Krzemiński and Krzemiński (2003)).

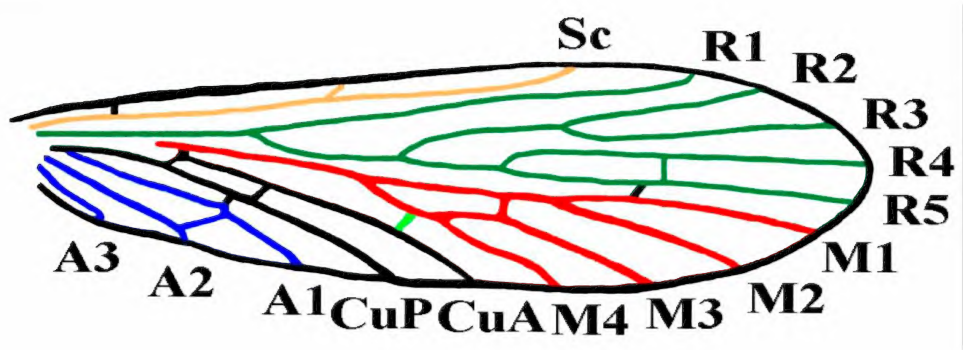


FIGURE 3. The groundplan hypothetical primitive Dipter wing according to Saigusa (2006).

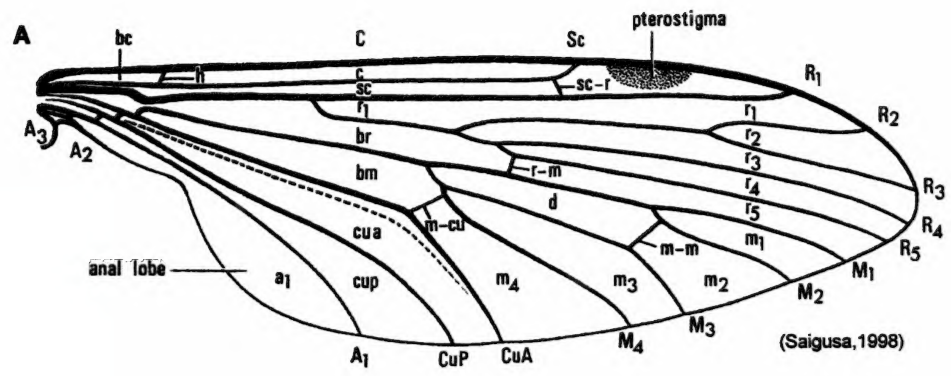


FIGURE 4. Wing of adult female of †*Dungeyella gavini* showing the U-shaped Cubital Fork (U-sCuFk) (redrawn after Jarzembowski *et al.* 2008, Figure 3A). Wing is modified and colour-coded.

BLACK = for the entire outer wing margin (proposed here).

ORANGE = for the Costa (proposed here).

YELLOW = for all Scutal veins (as in Krzemiński and Krzemińska, 2003).

GREEN = for all Radial veins (as in Krzemiński and Krzemińska, 2003).

RED = for all Medial veins (as in Krzemiński and Krzemińska, 2003).

PURPLE = for all Cubital veins (proposed here).

BLACK DASHED LINE = for the pseudovein (proposed here).

SKY BLUE = for all Anal veins (as in Krzemiński and Krzemińska, 2003).

DARK BLUE = for all Crossveins (proposed here).

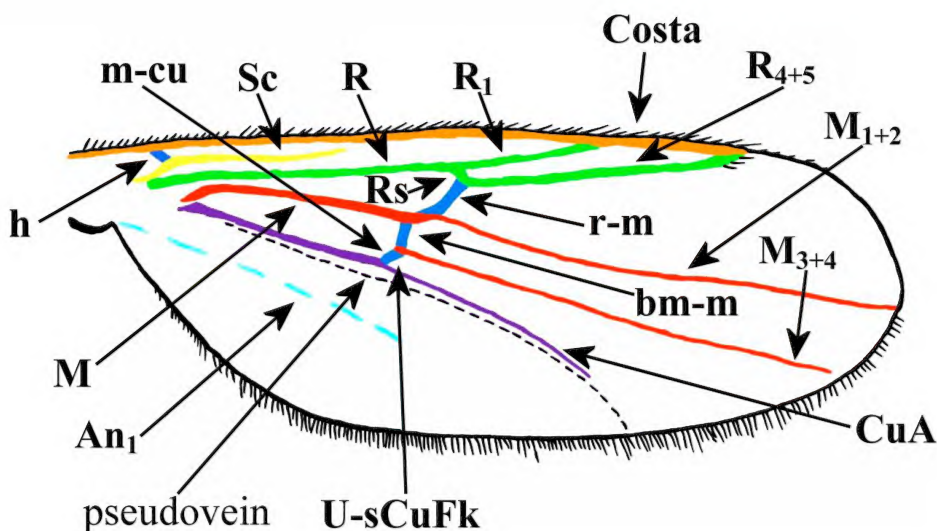


FIGURE 5. Wing of adult male of †*Cretodiamesa taimyrica* showing the V-shaped Cubital Fork (V-sCuFk) (redrawn after Kalugina, 1976a). Wing is modified and colour coded.

BLACK = for the entire outer wing margin (proposed here).

ORANGE = for the Costa (proposed here).

YELLOW = for all Scutal veins (as in Krzemiński and Krzemińska, 2003).

GREEN = for all Radial veins (as in Krzemiński and Krzemińska, 2003).

RED = for all Medial veins (as in Krzemiński and Krzemińska, 2003).

PURPLE = for all Cubital veins (proposed here).

BLACK DASHED LINE = for the pseudovein (proposed here).

SKY BLUE = for all Anal veins (as in Krzemiński and Krzemińska, 2003).

DARK BLUE = for all Crossveins (proposed here).

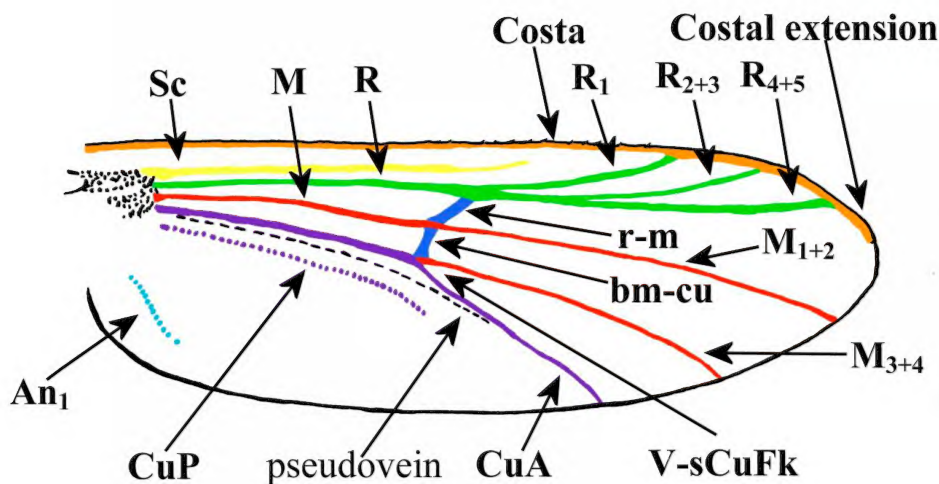


FIGURE 6. Evolution of the Cubital Fork (Redrawn by JPOC from a sketch by PA).

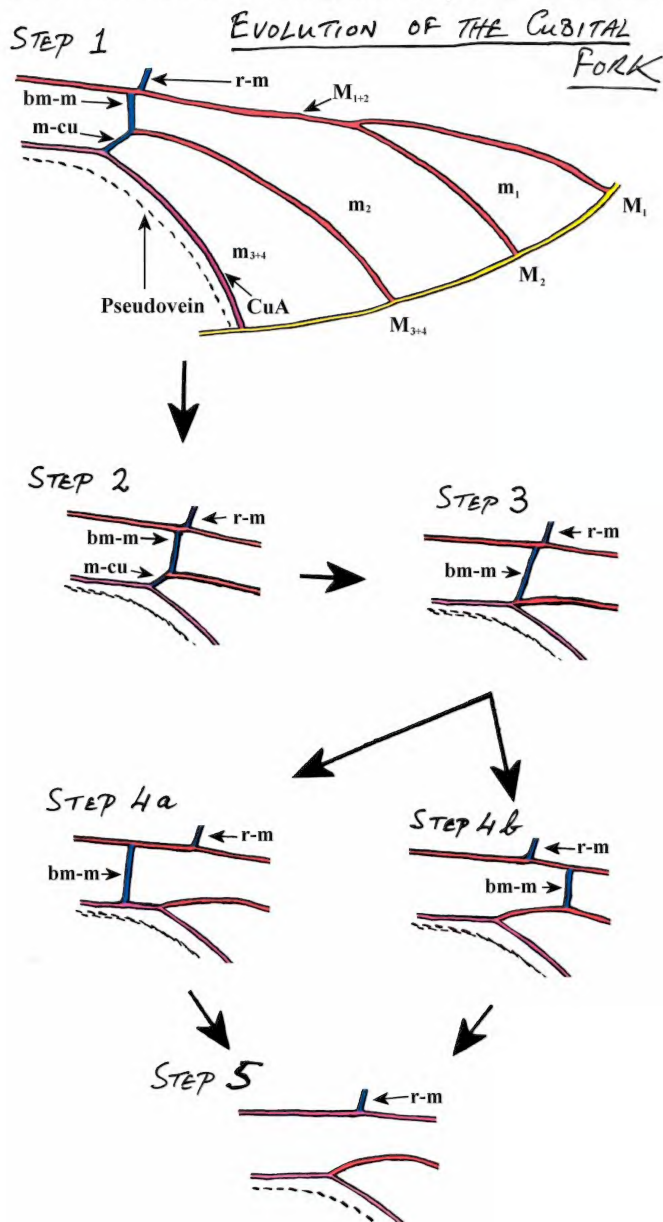


FIGURE 7. Partial evolution of the Cubital Fork in Diptera with a discal cell (Redrawn by JPOC from a sketch by PA).

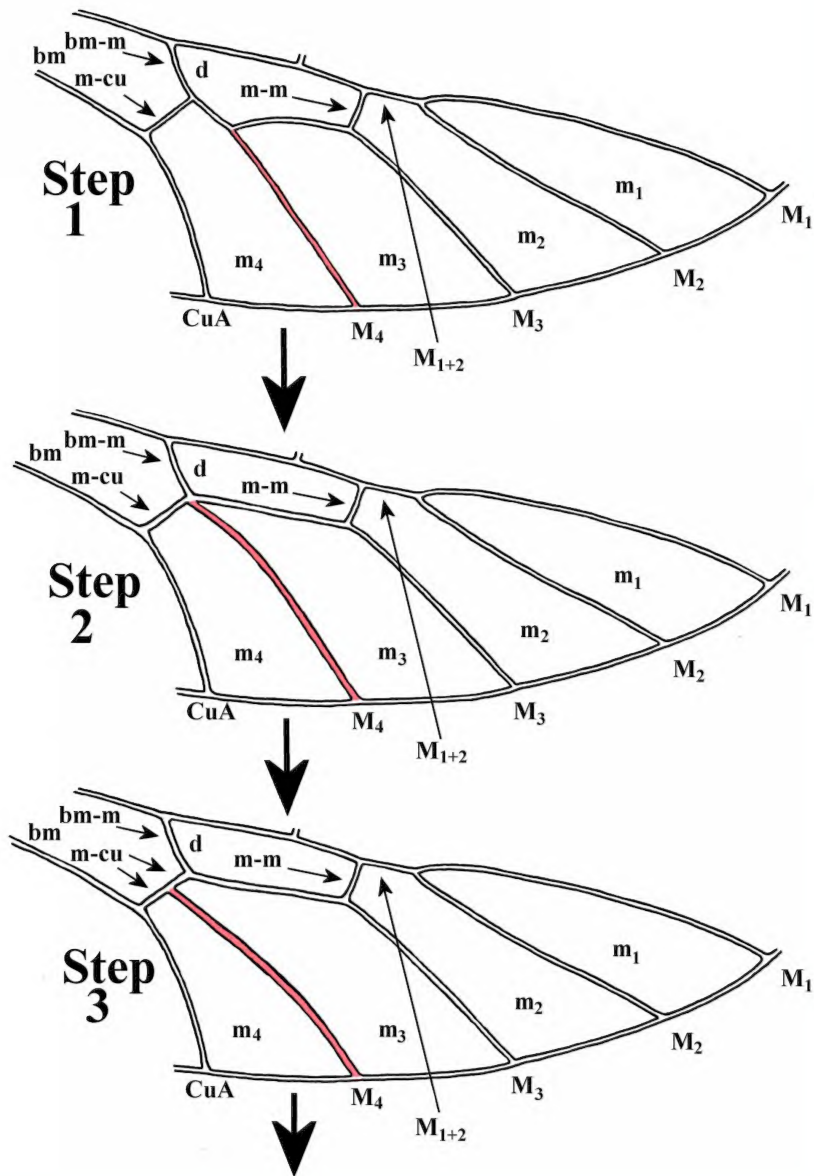


FIGURE 7 (continued).

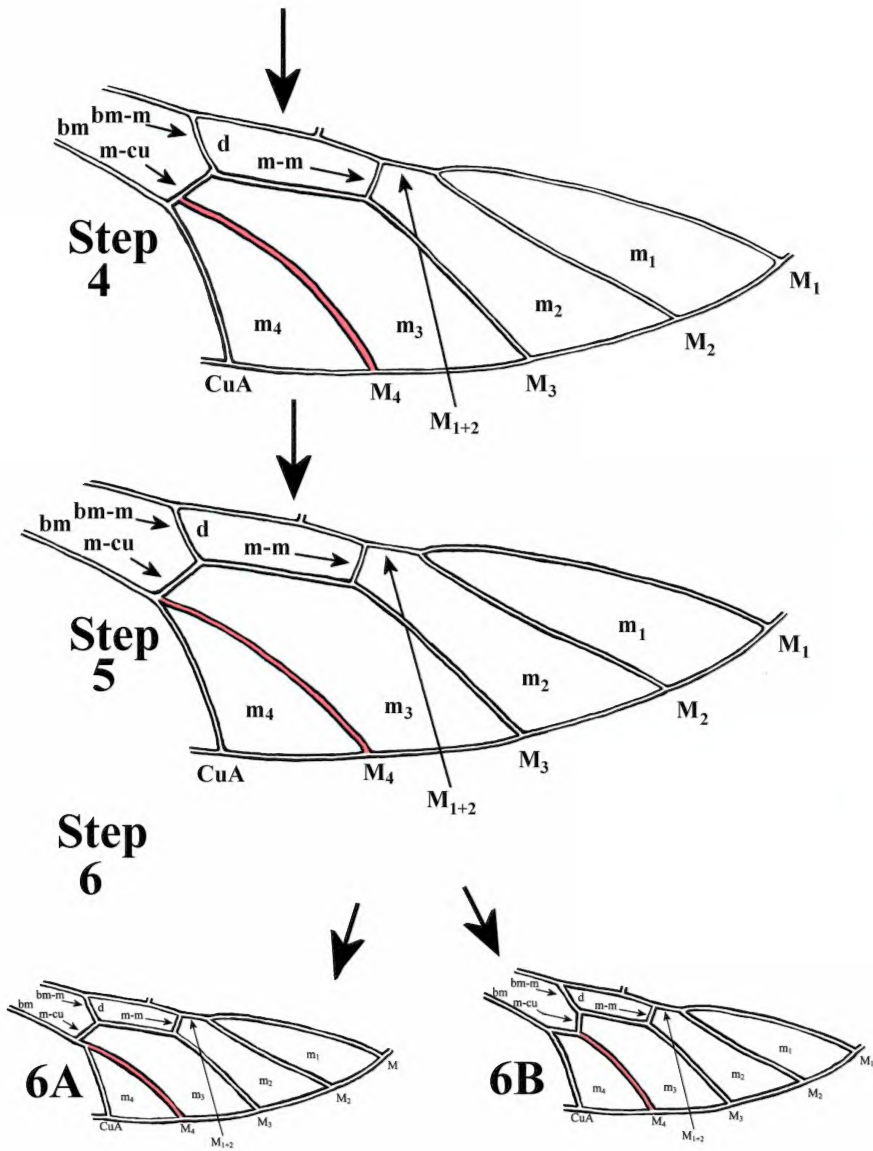
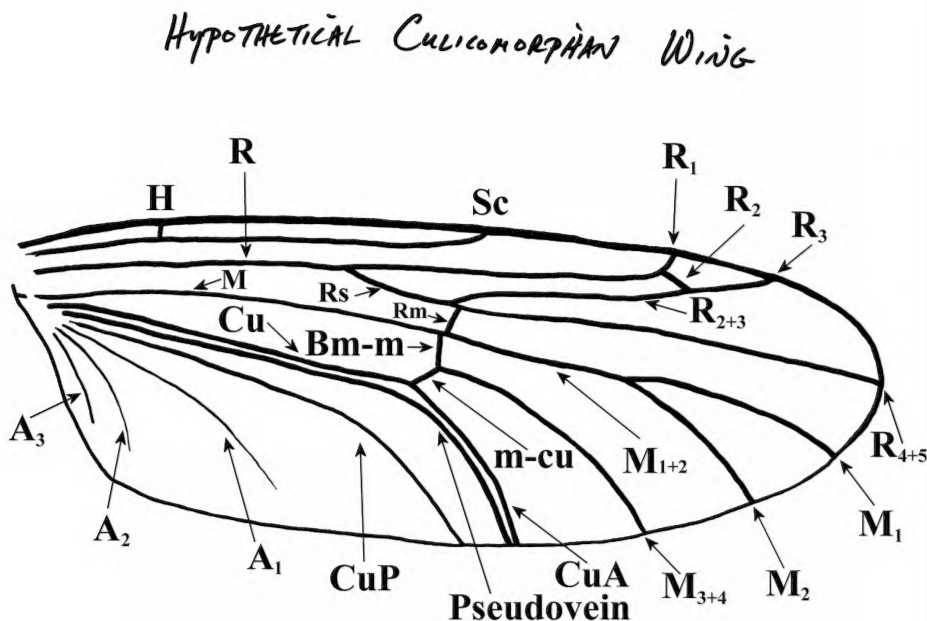


FIGURE 8. Groundplan hypothetical Culicomorpha wing.



Acknowledgements

Dr Patrick Ashe became ill in the autumn of 2021, was hospitalised in December that year and sadly died six months later on 19 June 2022. Before his death, he mentioned that he wanted his theories about a groundplan hypothetical Culicomorpha wing to be published. Following his passing, with the kind cooperation of the Ashe family, particularly his brother Fergus, Professor Declan Murray and JPOC were given access to Patrick's computer, files and documents in his home office. Draft fragments of text, in printed and electronic format, that he had prepared concerning his wing theory were located. This article was prepared by JPOC based on these fragments.

References

- Ashe, P., Murray, D. A. and O'Connor, J. P. (2018) Recognition of two additional fossil subfamilies in the Chironomidae (Diptera) - †Dungeyellinae subfam. nov. and †Cretodiamesinae Kalugina stat. nov. *Bulletin of the Irish Biogeographical Society* **42**: 225-242.

- Ashe, P. and O'Connor, J. P. (2012) *A World Catalogue of Chironomidae (Diptera). Part 2. Orthocladiinae*. Irish Biogeographical Society & National Museum of Ireland, Dublin. 968pp.
- Borkent, A. (2012) *World species of biting midges (Diptera: Ceratopogonidae)*. 1-234.
- Cumming, J. M. and Wood, D. M. (2017) Adult morphology and terminology. Pp 89-133. In Kirk-Spriggs, A. H. and Sinclair, B. J. (eds) *Manual of Afrotropical Diptera*. Vol. 1. Introductory chapters and keys to Diptera families. *Suricata* 4. South African National Biodiversity Institute, Pretoria. 1361pp.
- Krzemiński, W. and Evenhuis, N. L. (2000) Review of Diptera palaeontological records. Pp 535-564. In Papp, L. and Darvas, B. (eds) *Contributions to a manual of Palaearctic Diptera (with special reference to the flies of economic importance)*. Volume 1 A.6. Science Herald, Budapest.
- Krzemiński, W. and Krzemińska, E. (2003) Triassic Diptera: descriptions, revisions and phylogenetic relations. *Acta Zoologica Cracoviensia* **46** (Supplement - Fossil Insects): 153-184.
- McAlpine, J. F. (1981) 2. Morphology and terminology - adults. Pp 9-63. In McAlpine, J. F., Peterson, B. V., Shewell, G. E., Teskey, H. J., Vockeroth, J. R. and Wood, D. M. (coordinators) *Manual of Nearctic Diptera*. Volume 1. Ottawa, Research Branch, Agriculture Canada, Monograph **No. 27**. 674pp.
- Merz, B. and Haenni, J.-P. (2000) 1.1. Morphology and terminology of adult Diptera (other than terminalia). In Papp, L. and Darvas, B. (eds) *Contributions to a Manual of Palaearctic Diptera*. Vol. 1. Science Herald, Budapest. 978pp.
- Saigusa, T. (2006) *Homology of wing venation of Diptera*. Privately printed by T. Saigusa, Fukuoka, Japan. 26pp.
- Wootton, R. J. and Ennos, A. R. (1989) The implications of function on the origin and homologies of the dipterous wing. *Systematic Entomology* **14**(4): 507-520.

APPENDIX 1. Wing terminology and abbreviations used.

The following is a list of the wing vein terminology and abbreviations used. The abbreviations are used whenever necessary in both the text and in the wing figures to facilitate the discussion

Veins

A₁, A₂, A₃ = Anal

C = Costa

CuA = Anterior Cubitus – we divide it into a distal part (**CuA_d**) and a proximal part (**CuA_p**) – see below. The **CuA** vein is incorrectly labelled as **CuA₂** in many taxonomic works (e.g. McAlpine, 1981, Fig. 2.67, Cumming and Wood, 2009, Fig. 2.43).

CuA_d = the distal part of the Anterior Cubitus (**CuA**) forms the posterior branch of the Cubital Fork and extends from the fork towards the wing margin.

CuA_p = the proximal part of the Anterior Cubitus (**CuA**) which extends from its origin near the wing base and terminates just before the Cubital Fork.

CuP = Posterior Cubitus. In many taxonomic works the vein-like fold (= **Pseudovein**) behind **CuA** was incorrectly treated as vein **CuP**. Consequently, the next true vein after the **Pseudovein** which is often incorrectly labelled “**A₁**” is the real **CuP** vein.

M = Media

M₁, M₂, M₃, M₄ = posterior (sectoral) branches of media (**M₁** and **M₂** or **M₃** and **M₄** can fuse partially or completely creating respectively **M₁₊₂** and **M₃₊₄**). The vein incorrectly labelled as **CuA₁** in McAlpine (1981) can be either **M₃₊₄** or **M₄**

Pseudovein = The **Pseudovein** is the vein-like fold just behind the Anterior Cubitus (**CuA**). In many taxonomic works it was wrongly believed to be the Posterior Cubitus (**CuP**). Its status was resolved by Saigusa (2006) who proved that it is not a true vein but merely a vein-like fold

R = Radius

R₁ = anterior branch of the radius. It consists of a single vein, **R₁**

R₂, R₃, R₄, R₅ = posterior (sectoral) branches of the radius. In many Diptera some of these veins can fuse together to form a single vein, e.g. **R₂₊₃**, **R₄₊₅**, but other options are possible. When there is a single fused vein present (e.g. **R₂₊₃**) the name of the corresponding cell below the vein also changes its name (i.e. **r₂₊₃**)

Rs = radial sector, posterior branch of the radius. It consists of a maximum of four veins (**R₂**, **R₃**, **R₄** and **R₅**) but the number is often reduced in many Diptera due to fusion between some of the veins (e.g. **R₂₊₃**, **R₄₊₅**)

Sc = subcostal

V-sCuFk = V-shaped Cubital Fork, consists of two components: (i) the anterior branch is either **M₃₊₄** or **M₄** and (ii) the posterior branch is **CuA_d** – the distal part of **CuA**

U-sCuFk = U-shaped Cubital Fork, consists of three components: (i) the anterior branch is either **M₃₊₄** or **M₄** and (ii) the posterior branch is **CuA_d** (the distal part of **CuA**)

cells

a₁, a₂, a₃ = anal

bc = basal costal

bm = basal medial

br = basal radial

c = costal

cua = anterior cubital

cup = posterior cubital

d = discal

m₁, m₂, m₃, m₄ = medial

r₁, r₂, r₃, r₄, r₅ = radial

sc = subcostal

crossveins

Two crossveins between M and CuA

(i) **bm-m** = basal medial-medial. This is the anterior crossvein when there are two clearly defined crossveins between **M** and **CuA**.

(ii) **m-cu** = medial-cubital. This is the posterior crossvein when there are two clearly defined crossveins between **M** and **CuA**. The terminal position is quite variable and it may end in **Cu**, in **M₄** or in **M₃₊₄**)

One crossvein between M and CuA

bm-cu = basal medial-cubital. The correct term to apply is **bm-cu** when only a single crossvein remains between **M** and **CuA** it is the result of fusion between **bm-m** and **m-cu**.

h = humeral

m-m = medial-medial

r-m = radial-medial

sc-r = subcostal-radial

APPENDIX 2. Colour coding of wing venation.

Krzemiński and Krzemińska (2003, Figs 1A-G) used colour coded diagrams of the wing venation and used different colours for specific longitudinal sector veins (e.g. green for all radial veins, red for medial veins and black for cubital veins) although the colours used for the crossveins were not consistent (either black or green) and black was also used for the wing margin (including the Costa). Since the Order Mecoptera is considered to be the group from which Diptera evolved, this colour coding was used to demonstrate how the basal Diptera wing (*op. cit.* Fig. 1G) evolved from those Mecoptera with dipteroidal venation (*op. cit.* Figs 1A-F).

The same colour coding of Krzemiński and Krzemińska (2003) is used here with some modifications given in Ashe *et al.* (2018): (i) to account for more recently adopted changes in terminology of some veins, (ii) acceptance that the “vein” previously termed the **Posterior Cubitus (CuP)** is **not** a true vein but merely a fold in the wing that is now designated the **Pseudovein** – the real **CuP** vein is the next posterior vein after the **Pseudovein**, and (iii) the recognition that a continuous **Costa** around the entire perimeter of the wing is the plesiomorphic basal condition in Diptera, although in most extant, primitive and fossil taxa it is not continuous but is thickened and usually terminates in either the anterior wing margin or near the wing apex.

The colour coding given here is partially based on that given in Krzemiński and Krzemińska (2003) with additions colour selections in Ashe *et al.* (2018). The complete colour coding proposed for the Diptera (including Chironomidae) and those Mecoptera with dipteroidal venation was given in Ashe *et al.* (2018) and is outlined below. To facilitate discussion of relevant features on the respective wings of two fossil chironomids this colour coding was used by Ashe *et al.* (2018). This colour coding may also be applicable to other insect orders but may require some modification for more complex wing venations:-

Black = for the entire outer wing margin (as in Ashe *et al.*, 2018).

Orange = for the Costa (as in Ashe *et al.*, 2018).

Yellow = for all Scutal veins (as in Krzemiński and Krzemińska, 2003).

Green = for all Radial veins (as in Krzemiński and Krzemińska, 2003).

Red = for all Medial veins (as in Krzemiński and Krzemińska, 2003).

Purple = for all Cubital veins (as in Ashe *et al.*, 2018).

Black dashed line = for the Pseudovein (as in Ashe *et al.*, 2018).

Sky Blue = for all Anal veins (as in Krzemiński and Krzemińska, 2003).

Dark Blue = for all Crossveins (as in Ashe *et al.*, 2018).

ANNOTATED CHECKLIST OF SAPROXYLIC COLEOPTERA IN THE COUNTIES OF NORTHERN IRELAND

Roy Anderson

1 Belvoirview Park, Belfast BT8 7BL, Northern Ireland.

e-mail: <andersonroy530@gmail.com>

Abstract

A checklist of species considered saproxylic in the geographical area of Northern Ireland is provided. The listing follows the current taxonomic checklist order (Duff, 2012), with species name, proposed Northern Ireland status, and a short account of the ecology of each species. The records that follow are ordered by vice county, with locality name, grid reference (where available), recorder's name, date of record, and source. The sequence is in approximate date order, the earliest record first.

Key words: Coleoptera, insects, saproxylic, Northern Ireland, checklist.

Introduction

The checklist of species considered saproxylic in the geographical area of Northern Ireland is given below. The listing follows the current taxonomic checklist order (Duff, 2012), with species name, proposed Northern Ireland status, and a short account of the ecology of each species. The records that follow are ordered by vice county, with locality name, grid reference (where available), recorder's name, date of record, and source. The sequence is in approximate date order, the earliest record first.

The status within Northern Ireland is provided as a starting point, based on existing evidence. This will likely be modified as knowledge of the fauna increases. The range and status of species are summarised as follows: **Extinct** – no records since about 1900; **Rare** – only a few modern records; **Scarce** – known from only about ten or fewer modern localities; **Uncommon** – known from many counties, some with many records; **Widespread** – known from most counties and plenty of records; only the year of records are provided for the most widely recorded species; **Common/Widespread** – only VC distribution provided; **Established introduction** – species believed to have been brought into Ireland accidentally through commerce; a few have first been found only very recently; **Casual Introduction** – an occasional record only, no established populations known; **Recent arrival** – believed to have arrived naturally; **Doubtful** – only a single report but no evidence of a resident population and **Unclear** – too little information for meaningful assessment of status.

The recorder for all individual records will be given, usually as an acronym to save space (see Appendix 1), followed by any literature references (usually bracketed). All records

employed in this review (and many paraphrased as vice-county records for common species) have been uploaded to the Recorder database held by CEDaR LRC, Ulster Museum and National Biodiversity Network (NBN), Nottingham. A full list of references is appended.

Species accounts

FAMILY CARABIDAE ground beetles

***Ocys tachysoides* (Antoine, 1933) - Widespread and common (Plate 1)**

Formerly known as *Ocys harpaloides* (Audinet-Serville, 1821). Recent research has indicated that a species aggregate is involved here comprising *O. harpaloides* and *O. tachysoides* (Maddison and Anderson, 2016). The latter segregate was shown to correspond to a species name coined for material collected by Antoine in Morocco, 1933. Unlikely as it may seem, this is the saproxylic species occurring in Northern Ireland forests, and throughout much of Europe. *O. harpaloides* meanwhile, is a species of open habitats, mostly marine shorelines in Ireland, and is not saproxylic. *O. tachysoides* is abundant under bark on dead and live wood across Northern Ireland. **H33, H36, H37, H38, H39, H40.**

***Dromius meridionalis* Dejean, 1825 – Widespread**

Fairly widespread under bark on both broadleaf and coniferous trees. Predatory on mites and Collembola. **H33, H36, H37, H38, H39, H40.**

***Dromius quadrimaculatus* (L., 1758) – Widespread and common**

Common under bark of broadleaf trees across Northern Ireland. Habits similar to the previous species. **H33, H36, H37, H38, H39, H40.**

***Caladromius spilotus* (Illiger, 1798) – Scarce**

Less common than the two previous species, under bark mainly of broadleaves but also conifers. Often found on smaller trees such as *Malus*, *Crataegus*. **H37, H38, H39.**

FAMILY HISTERIDAE hister beetles

Members of this family are predatory, especially on larvae of other deadwood inhabiting insects, also on mites and springtails. The following species are the only Irish ones found associated with wood decay, but others are occasionally found in this situation although more strongly associated with other habitat types.

***Gnathoncus nannetanus* (Marseul, 1862) – Rare**

Associated with bird nests in hollow trees. Much under-recorded because of the habitat. **H36** Tyrone: Seskinore Forest (H486639), in grass heap, 13.v.2015, MDB. **H39** Antrim: Bucklebrook House (J137668), in hen litter, 23.iv.2012; in shed housing ducks, 25.v.2012, MDB. **H40** Londonderry: Berryman's Hill shore Lough Neagh (H995513), under swan carcass, 5.vii.2019, RA.

***Gnathoncus rotundatus* (Kugelann, 1792) – Rare**

Like the previous species, mostly associated with bird nests in trees, but also found in food stores. **H38** Down: East Twin, Belfast Docks (J3676), in grain storage, A. F. O’Farrell, 1942-1946. **H40** Londonderry: Derry Docks (C41), provender mill, A. F. O’Farrell, 1942-1946.

***Abraeus perpusillus* (Marsham, 1812) syn. *A. globosus* (Hoffman, J., 1803) – Rare**

A thermophilic species which is restricted to warmer, drier eastern counties of Ireland. **H38** Down: Hollymount NNR (J472437), under bark on *Fagus* by *Ganoderma* bracket, 25.iii.2012, RA; Lady and Sir Thomas Dixon Park (J305607), 6 in soft-rotted heartwood of standing dead *Acer pseudoplatanus*, plus 2 in *Bjerkandera adusta* outgrowths nearby on the main trunk, 26.ix.2015, RA.

***Margarinotus merdarius* Hoffmann, 1803 – Rare**

Probably less rare than appears because of its predilection for aviaries and poultry houses. **H38** Down: Killaughey Road, Donaghadee (J587789), 10, at base of old aviary, garden, 10.iv.2008, DN. **H39** Antrim: Bucklebrook House (J138668), 2, in duck shed, 25.v.2012; 2, in poultry shed, 4.vi.2015, MDB.

FAMILY PTILIIDAE feather-winged beetles

Usually found living under bark or in rotholes on trees, feeding on moulds.

***Nossidium pilosellum* (Marsham, 1802) – Extinct**

Develops in decaying wood, particularly rotten stumps and damp, rotten, fungus-colonised timber, and especially elm and *Fagus* in Britain. Northern Ireland: ‘very rare, on rotten stumps (Haliday, 1855)’ (Johnson and Halbert, 1902) – Belfast area (J37), AHH.

***Ptenidium laevigatum* Erichson, 1845 – Rare**

The only record indicates a non-saproxyllic habitat. **H39** Antrim: Larrybane Quarry (D049450) at roots of grass and moss, chalk quarry, 10.vii.2012, MDB (det. M. Derby).

***Ptinella cavelli* (Broun, 1893) – Established introduction**

Under bark of dead *Fagus* mainly and conifers. A native of New Zealand, first found by Chris Reid in 1975 (Nash, Anderson and O’Connor, 1997). **H36** Tyrone: Knockmany Forest (H540549), 31.vii.2017, MDB. **H37** Armagh: Tynan Abbey (H757427), 29.ix.2011, RA; Slieve Gullion Forest (J038193), 8.iii.2012, RA. **H38** Down: Clandeboye Estate (J4977), 25.viii.1975, CAMR; Bangor Town (J5081), 5.viii.1975, CAMR; Stormont Estate (J397746), 13.v.1994, RA; Lady Dixon Park (J302681), 24.xi.1992, RA; Hillsborough Forest (J250580), 13.iv.1995, RA; Rostrevor Oakwood NNR (J175184), 13.v.2000, RA; Sea Plantation Mount Stewart (J552695), 26.vii.2003, RA; Castle Espie (J494671), 21.vii.2006, RA; Donard Park (J373301), 31.xii.2011, RA; Shooter’s Island (J494471), 23.ii.2012, RA. **H39** Antrim: Lagan Meadows (J334700), 27.xi.1992, RA.

***Ptinella errabunda* Johnson, 1975 – Established introduction**

Probably another native of New Zealand which now occurs abundantly under bark and in decaying wood in several Northern Ireland parkland sites (Nash, Anderson and O'Connor, 1997). **H37** Armagh: Slieve Gullion Forest (J038193), under bark of fallen pine, 8.iii.2012, RA. **H38** Down: Lagan Meadows (J334700), under bark of *Pinus sylvestris*, 27.xi.1992, RA. **H39** Antrim: Newforge, River Lagan (J328692), under bark of rotting *Larix kaempferi* with fruiting decay fungus *Coniophora puteana*, 20.x.1992, RA (Nash, Anderson and O'Connor, 1997); Ballyskeagh, Belfast (J280671), under *Fagus* bark, 8.xii.1992, RA.

H40 Londonderry: Ness Wood ASSI (C524113), under bark, hazel coppice, 31.v.2017, MDB.

***Ptinella taylorae* Johnson, 1977 – Established introduction**

The rarest of the three *Ptinella* species occurring here. **H39** Antrim: Rea's Wood NNR (J140851), Antrim, under alder bark, 21.x.2006, RA.

***Pteryx suturalis* (Heer, 1841) – Very rare**

H39 Antrim: Rea's Wood NNR (J1485), Antrim, 17.iv.1974, AGI, det. CJ.

FAMILY LEIODIDAE round fungus beetles

The species of *Anisotoma* have an association with slime moulds, adults and larvae feeding on the spores. Species of *Agathidium* are most likely also associated with slime fungi but the evidence is less clear – not all species appear to be associated with decaying wood. In general, *Agathidium* species are typical of shady woodlands rather than sunny unwooded habitats.

***Anisotoma humeralis* (Fabricius, 1792) – Uncommon old growth species**

Modern sites almost invariably ancient woodlands and ancient wood pastures. **H33** Fermanagh: Reilly Wood, Crom (H339242), 28.v.1992, KNAA; Inisherk, Crom (H357243), FIT, 1.vii.1992-7.vii.1992, APF; Florencecourt (H181345), 24.viii.2010, RA. **H36** Tyrone: Brookend NR (H945727), Lough Neagh, 8.v.2007, RA; Seskinore Forest (H48486403), 3.viii.2015, MDB. **H38** Down: Stormont, Belfast (J404751), 17.ix.1994, RA; Tollymore Forest Park (J340324), 27.vi.1998, RA; Blackwood Walk (J468781), 15.v.2014, RA; Lady Dixon Park (J302679), 14.v.2020, RA. **H39** Antrim: Shane's Castle (J1188), vi.1902, CWB (Halbert, 1910b); 1.vii.2010, RA; Great Deer Park, Glenarm (D2911), 20.v.2006, KNAA; Ballinderry Lower (J136673), 14.viii.2016, MDB. **H40** Londonderry: Banagher Glen (C6704), FIT, 8.vii.2007, KNAA.

***Anisotoma orbicularis* (Herbst, 1792) – Rare old growth species**

Only known from Crom Estate. **H33** Fermanagh: Inisherk, Crom (H357243), 1.vi.1992, 7.vii.1992, 5.viii.1992 and 4.ix.1992; Inishfendra, Crom (H373237), 15-16.vii.1993, FIT samples, APF.

***Anisotoma castanea* (Herbst, 1792) – Recent arrival**

Associated with pine forests in Scotland. State of establishment unknown. **H36** Tyrone:

Parkanaur Forest (H739616), in *Armillaria* under cut *Prunus laurocerasus*, 21.ix.2013, MDB. ***Amphicyllis globus* (Fabricius, 1792) – Rare**

In decaying timber, mostly in ancient woodland areas in Britain. One modern report for Ireland. **H36** Tyrone: Parkanaur Forest (H736613), 1, in fungus, 21.ix.2013, MDB.

***Agathidium confusum* Brisout, 1863 – Rare old growth species**

First noted in Ireland in 1993 but now regarded as an overlooked native. **H33** Fermanagh: Inishfendra Island, Crom (H373327), FIT, 16.vi.1993 – 15.vii.1993, APF; Florencecourt (H176344), 1 on *Armillaria*, garden, MDB. **H36** Tyrone: Glenmore Wood ASSI (H654608), 1, beaten off *Corylus*, 18.ix.2013, RA; Parkanaur (H737610), 1 in rotting *Armillaria*, 29.xii.2014, MDB; (H739620), 4 in trap baited with chicken wings, 10.vii.2021, MDB. **H39** Antrim: Great Deer Park, Glenarm (D2911), in numbers from the twigs of a fallen large *Quercus* branch, 20.v.2006, KNAA (Alexander, 2008).

***Agathidium nigripenne* (Fabricius, 1792) – Scarce**

In Ireland mainly reported across the more northern counties, but not northern in Britain. **H33** Fermanagh: Inisherk Island, Crom (J357243), FIT, 1.vi.1992 – 7.vii.1992, APF. **H36** Tyrone: Parkanaur Forest (H732612), 12.iv.2021, MDB. **H37** Armagh: Armagh (H8745), WFJ (Johnson and Halbert, 1902); Annagarriff NNR (H902616), Peatlands Park, 29.v.2000, RA (Anderson, Simms and Nelson, 2000). **H38** Down: Stormont Estate (J397746), 7.v.1994, 13.v.1994, RA; Belvoir Forest (J346694), 23.iv.1998, RA; Hillsborough Forest (J247579), 9.viii.2000, RA; Shooter's Island, Quoile (J494470), 23.ii.2012, MDB. **H39** Antrim: Farr's Bay, Randalstown (J089870), 4.vii.1986, RCW (Welch, 1986); Belfast Castle (J327793), 11.vii.2004 and 9.iii.2008, RA; Rea's Wood NNR (J140852), 23.x.2019, RA. **H40** Londonderry: Ness Wood (C528118), 19.v.2007, KNAA.

***Agathidium rotundatum* (Gyllenhal, 1827) – Rare**

Only a single recent site in Ireland, at Breen Wood. **H33** Fermanagh: Belleisle (H2935) (Porter, 1898; Johnson and Halbert, 1902). **H37** Armagh: Palace Demesne (H8744), in moss, WFJ (Johnson, 1892a); Coney Island, Lough Neagh (H9464), WFJ (Johnson and Halbert, 1902). **H39** Antrim: Murlough Bay (D2041), GWC, det. JNH (Johnson and Halbert, 1902); Breen Wood (D125337), 30.viii.2017, 1, in FIT, *Quercus petraea* wood, AM.

***Agathidium seminulum* (Linnaeus, 1758) – Rare**

Only a single site in Northern Ireland. **H33** Fermanagh: Munnilly Bridge, Old Ulster Canal (H485242), 19.vii.2011, RA.

***Agathidium varians* Beck, 1817 – Scarce**

H33 Fermanagh: Inisherk, Crom (H357243), FIT, 1.vi.1992 – 7.vii.1992, APF; Castle Coole Park (H2643), FIT, viii-14.ix.2007, KNAA. **H38** Down: Belvoir Forest, Belfast (J343696), 24.ii.1999, RA. **H39** Antrim: Shane's Castle (J1188), CWB, 1902, det. JNH (Johnson and

Halbert, 1902: Supplement List); Rea's Wood, Antrim (J138847), 3.xii.1994, RA; Great Deer Park, Glenarm (D2911), FIT, vii-19.viii.2007, KNAA; Victoria College, Belfast (J324713), 18.iv.2005, RA. **H40** Londonderry: Drenagh Estate (C6923), FIT, viii-15.ix.2007, KNAA.

FAMILY STAPHYLINIDAE rove beetles

Few staphylinids are restricted to decaying wood, though many are associated with fungal fruiting bodies and the degree of association with wood-decay fungi is often unclear. Species have therefore been included here which are not associated with primary decay in wood but with fungi which are mycorrhizal upon forest trees and therefore part of the whole wood biome. This engages the study of species which are not included by Alexander and Anderson (2012) in their summary of Irish saproxylic Coleoptera, for instance, all the extant species of *Gyrophana* are listed, not just those found on bracket fungi or associated directly with dead trees. It is problematical to select species of a genus in which all feed on fungal spores on the basis of particular genera of fungi found on dead wood as the full range of food sources is incompletely known.

STAPHYLINIDAE SUBFAMILY OMALIINAE ocellate rove beetles

***Coryphium angusticolle* Stephens, 1834 – Rare old growth species**

Lives beneath bark of dead *Quercus* and other trees, and in red-rotten *Quercus*, mostly in wooded areas, possibly only ancient sites; widespread in Britain. **H37** Armagh: Derryadd Lough (H914604), Peatlands Park, 16.iii.2002, RA. **H38** Down: Holywood, sea coast (J4079) (Haliday, 1841, 1855; in a rotten stump, Haliday ms.) (Johnson and Halbert, 1902); Belvoir Forest, Belfast (J341695), 12.iv.1995; (J346694), 17.iii.1998, RA. **H40** Londonderry: Culmore Derry (C4722), CWB (Buckle, 1900; Johnson and Halbert, 1902).

***Acrulia inflata* (Gyllenhal, 1813) – Rare old growth species**

Adults and larvae occur under fungoid bark of various dead broad-leaved trees, where there is a moist interface. They may be general scavengers, or feeding upon insect material and on fungal spores. In Britain this species is confined to hill country in the north and west but in Ireland tends to be submontane. **H36** Tyrone: Glenmore Wood ASSI (H656607), in old fruiting body of *Piptoporus betulinus* on *Betula*, 21.vi.2014; (H656608), 18.x.2014, MDB. **H40** Londonderry: Banagher Glen (H669043), a pair among fruiting bodies of fungus *Hymenoscyphus calyculus* on *Quercus* branch, 6.xi.1999, RA; Drumlamph Woods (C840039), beaten off *Ulex* flowers, 26.v.2001, RA.

***Dropephylla devillei* Bernhauer, 1902 – Scarce old growth species**

In Northern Ireland species of the genus *Dropephylla* live under bark of dead wood feeding on small arthropods, and adults may also be found feeding at blossom. The four species listed here are reasonably widespread in both lowland and submontane sites and often in old forest

areas. **H33** Fermanagh: Castle Coole Park (H2542), 17.viii.2006, KNAA; Colebrooke Estate (H405445), 25.x.2012, MDB. **H36** Tyrone: Baronscourt Park (H3682), 15.vi. and 12.ix.2006, KNAA. **H37** Armagh: Peatlands Country Park (H896612), 17.iii.1993; (901615), 23.x.1993, RA; Slieve Gullion Forest (J039197), conifer bark, 8.iii.2012, RA; Loughgall Country Park (H902515), 26.ix.2012, MDB; Derrytrask School Lands (H885643), 21.ix.2020, RA. **H38** Down: Portavo Reservoir (J558823), 8.i.2015, MDB. **H39** Antrim: Cave Hill (J325795), in numbers under bark of Scots pine, 26.i.1980, RA (Hammond, 1980); Great Deer Park, Glenarm (H305115), 13.vi., 19.viii. and 16.ix.2006, KNAA.

***Dropephylla gracilicornis* (Fairmaire and Laboulbène, 1856) – Scarce**

Under bark and in rotten wood of dead branches of broad-leaved trees, especially *Quercus*. **H33** Fermanagh: Colebrooke Park (H405445), 25.x.2012, MDB. **H36** Tyrone: Baronscourt Park (H3682), 15.vi.2006, KNAA. **H37** Armagh: Slieve Gullion Forest (J039197), 8.iii.2012, MDB; Loughgall Country Park (H902515), 26.ix.2012, MDB; Derrytrask School Lands (H885643), 21.ix.2020, RA. **H38** Down: specimens seen (Hammond, 1980); Donard Park (J373301), 31.xii.2011, RA; Portavo Reservoir (J558823), 8.i.2015, MDB. **H39** Antrim: Lady Dixon Park, Belfast (J301681), 21.v.1980, RA; Great Deer Park, Glenarm (305115), 19.viii.2006, KNAA.

***Dropephylla ioptera* (Stephens, 1832) – Uncommon**

Occasional under bark of dead branchwood on broadleaf trees. Adults visit flowers of *Sorbus aucuparia*, etc. Widespread in Britain, but “probably very local” in Ireland (Hammond, 1980). Nevertheless, not uncommon in Northern Ireland. **H33** Fermanagh: Castle Coole Park (H2542), 17.viii.2006, KNAA; Garrison, Lough Melvin (G938520), 30.v.2007, DAL; Knockninny Hill (H272302), 1.vi.2007, RA; Garrison (G938520), 30.v.2007, DAL; Filbert Hill, Castle Coole (H257437), 15.viii.2010, RA; Old Crom Castle (H364239), 24.v.2012, MDB. **H36** Tyrone: Baronscourt Park (H3682), 24.x.2006, KNAA; Wood Lough (H759602), 24.v.2012, RA; Parkanaur Forest (H736617), 6.ii.2013, 4.xii.2013, RA; Glenmore Wood ASSI (H655608), 18.ix., 2013, MDB; Wood Lough (H759602), 24.v.2012, RA. **H37** Armagh: Peatlands Park (H890603), 29.v.2000, RA. **H38** Down: Hillsborough Forest (J250580), 20.vi.1995, RA; Morelands Meadow, Belvoir (J336696), 22.v.2004, RA. Donard Park, 31.xii.2011, RA. **H39** Antrim: Lady Dixon Park (J301680), 21.v.1980, RA; Barnett’s Park (J321687), 19.v.1994, RA; Dungonnell dam (D167172), 21.vi.1995, RA; Great Deer Park, Glenarm D305115), 22.v.2007, KNAA; Barnett’s Park (J320688), 11.xii.2015, RA. **H40** Londonderry: Ness Wood (C5211), 19.v.2007, KNAA.

***Dropephylla koltzei* Jászay and Hlavac, 2006 nec *vilis* (Erichson, 1840) – Uncommon**

Under bark of dead broad-leaved trees and conifers. Widespread in Britain but again “probably local” in Ireland (Hammond, 1980) referring to *Dropephylla koltzei*. It is unclear whether the true *D. vilis* occurs in Ireland. All materials identified as *D. vilis* using older keys

have proved to be *D. koltzei* upon dissection (RA). Both dissected and records for undissected specimens are provisionally combined here under *D. koltzei*. **H33** Fermanagh: Trory, Lower Lough Erne (H225483), under bark on dead sallow, 3.v.1995, KNAA. **H36** Tyrone: Ballybriest, Lough Fea (H763868), 5.vi.1994, RA; Washing Bay, Lough Neagh (H9902658), 31.i.2013, RA; Parkanaur (H735615), 6.iii.2013; (H737614), 4.xii.2013, RA. **H37** Armagh: Moyrourkan Lough (H985426), 18.x.1980, RA; Derryadd Lough (H914604), 11.v.2012, RA. **H38** Down: Donard Park (J373301), under bark of felled *Fagus*, vi.1923, OEJ (Janson, 1924); Leitrim Lodge (J224250), 1.iii.1980, RA; Morelands Meadow (J337697), 15.iv.2004, RA; Portavoe Reservoir (J560826), 8.i.2015, RA; Lackan Bog (J242368), 28.xii.2017, RA. **H39** Antrim: Carr's Glen (J317781), CWB (Johnson and Halbert, 1902); Belfast Castle (J325795), 26.i.1980, RA; Barnett's Park (J321687), 19.v.1994, RA.

***Hapalaraea pygmaea* (Paykull, 1800) – Rare old growth species**

Largely confined to areas of mature woodland, where it is found in bracket fungi, bird nests and squirrel dreys in the tree canopy, rotten wood, etc.; probably not an obligate wood-decay species. **H33** Fermanagh: Rossyvullan Hill, Castle Coole (H264430), one in *Polyporus squamosus* on dead standing sycamore, 20.vii.2010, RA; Colebrooke Park (H409450), dead branch on ancient *Quercus*, 25.x.2012, MDB/RA. **H37** Armagh: Tynan Abbey (H755414), three in *Polyporus squamosus* on elder, 26.vii.2011, RA/MDB; Derrymore House (J053281), in *Laetiporus sulphureus* on *Quercus*, 8.ix.2015, MDB. **H39** Antrim: near Belfast, R. Templeton (Johnson, 1889), 'now in collection of Belfast Nat. Hist. and Philosophical Society' (Johnson and Halbert, 1902). Hammond (1980) regards this record as unconfirmed.

***Phloeonomus punctipennis* Thomson, C.G., 1867 – Common and widespread**

Adults and larvae under bark of various dead broad-leaved wood; a fungal feeder; under-recorded due to past confusion with *Phloeonomus pusillus*; "probably widely distributed in Ireland" (Hammond, 1980). **H36, H33, H37, H38, H39.**

***Phloeonomus pusillus* (Gravenhorst, 1806) – Common and widespread**

Adults and larvae live under bark, mostly of dead conifer wood; widespread in Britain; "apparently less generally distributed in Ireland than *P. punctipennis*". **H36, H37, H38, H39, H40** (Hammond, 1980).

***Phloeostiba plana* (Paykull, 1792) – Scarce old growth species**

Adults attracted to fresh sap of broad-leaved trees – they feed on the sap; larvae develop under dead bark, feeding on sap as well as insects; mostly in areas of ancient woodland. **H36** Tyrone: Baronscourt Park (H3682), 12.ix.2006, KNAA; Parkanaur (H831612), bait trap – sugared red wine, 12.vi.2021, MDB. **H37** Armagh: Derrymore House (J054280), under bark of split *Fagus* trunk 8.xii.2013, MDB; ditto, in *Laetiporus sulphureus* on *Quercus*, 8.ix.2015, MDB. **H39** Antrim: Bucklebrook, Upper Ballinderry (J137668), bait trap – sugared red wine,

18.viii.2021, 29.viii.2021, MDB.

***Xylostiba monilicornis* (Gyllenhal, 1810) – Rare**

This species is winter- and spring-active meaning that the adult is easily overlooked. For this reason it has only recently been found in Ireland but is presumed to be an overlooked native. In Britain, it is said to be associated with ancient broad-leaved woods and pasture woodland in the midlands and north. The Irish records so far relate to subcortical habitat but in Britain it can also occur in agarics and birch polypore. **H37** Armagh: Slieve Gullion Forest Park (J038193), under bark on dead standing silver fir *Abies*, 8.iii.2012, RA. **H38** Down: Donard Demesne, Newcastle (J373301), 1 pair under fungoid bark of veteran *Fagus* on the ground, 9.i.2012, RA; Leitrim Lodge (J223256), 1 under bark of dead standing *Pinus sylvestris*, 29.ii.2012, RA.

STAPHYLINIDAE SUBFAMILY PSELAPHINAE short-winged mould beetles

Pselaphids are mainly predaceous feeders on mites but may also feed on moulds. The association with moulds in dead wood habitat competes with other mould habitats such as grass heaps.

***Euplectus infirmus* Raffray, 1910 – Rare**

In rotten wood and under bark, especially willow. Ireland (Pearce, 1957). **H33** Fermanagh: Castle Coole Park (H2643), from FIT in hollow horse chestnut, 14.ix.2006, KNAA. **H38** Down: Hillsborough Estate (J243576), 1 in pitfall in parkland, 5.vi.1992, RA.

***Euplectus karstenii* (Reichenbach, 1816) – Rare**

H33 Fermanagh: Castle Coole Park (H2643), from FIT in hollow horse chestnut, 14.ix.2006, KNAA.

***Euplectus mutator* Fauvel, 1895 syn. *E. fauveli* Guillebeau, 1888 – Rare**

Sometimes found in bird nests, also under bark and in rotten wood of *Quercus* and *Fagus* (Pearce, 1957). **H36** Tyrone: Knockmany Forest NR (H554559), under bark, large *Fagus* log, 30.viii.2017, RA; Derrygorry Brook at Favour Royal Forest (H624519), in grass heap, 8.x.2015, MDB. **H38** Down: Edenderry Woods (J318861), adhering to *Oxychilus alliarius* in *Fraxinus* wood pile, 11.xi.2016, RA.

***Euplectus piceus* Motschulsky, 1835 – Rare old growth species**

Under bark of *Quercus* and *Fagus*, and in red-rot decay in *Quercus*. **H33** Fermanagh: Castle Coole (H260433), in grass heap, 17.iii.2015, MDB.

***Bibloporus bicolor* (Denny, 1825) – Rare old growth species**

Under bark and in rotten wood of a wide variety of broadleaf and coniferous trees. **H33** Fermanagh: Inishfendra, Crom (H373237), FIT, 16.vi-15.vii.1993, APF.

STAPHYLINIDAE SUBFAMILY PHLOEOCHARINAE

Phloeocharis subtilissima Mannerheim, 1830 – Scarce

Amongst debris under *Fagus* bark, in moss on trees, on bracket fungi especially *Daedaleopsis confragrosa* on *Salix*, etc. **H37** Armagh: Peatlands Park (H904606), 23.v.2007, RA; Derryadd Lough (H911606), in *Piptoporus* on *Betula*, 11.v.2012, RA. **H38** Down: Rostrevor, Forest (J1817) 15.iv.1974, CAMR; Rostrevor Oakwood NNR (J185174), 2000 (Anderson, Simms and Nelson, 2000); Tollymore Park (J347313), 6.iv.2011, MDB; Donard Park (J372298), 9.i.2012, RA. **H39** Antrim: Shane's Castle (J1188), September 1902, C. W. Buckle (Halbert, 1910); under bark of fallen firs, June, 1923, O. E. Janson (1924); Rea's Wood, Antrim (J1485), 17.iv.1974, CAMR.

STAPHYLINIDAE SUBFAMILY TACHYPORINAE

Sepedophilus littoreus (Linnaeus, 1758) – Scarce

A mycetophagous species, feeding on fungal hyphae, not fruiting bodies, and rarely away from dead and decaying wood of some kind; occasionally found amongst leaf and other vegetable litter. Generally distributed in Britain, largely in ancient woodlands. Although not known prior to 1977, it seems probable that the species is an old woodland relict in Ireland (Anderson, 1978). **H33** Fermanagh: near Inishteige, Upper Lough Macnean (H024422), female from roadside grass cuttings bordering freshly felled scrub woodland, 12.iv.1977, RA (Anderson, 1978); Inisherk, Crom (H357243), FIT, vi-vii.1992, APF. **H38** Down: Tollymore Forest (J343318), under piled up Douglas fir bark, 9.iv.1993, RA; Murlough House (J414351), in wood pile and leaf litter, garden, RG; Mount Stewart (J566692), in rotten fungi, 23.x.2017, MDB. **H39** Antrim: near Portmore Lough (J119686), pair from under bark around fruiting fungus *Phlebia merismoides* on a rotting alder log in marginal old alder woodland, 24.xi.1984, RA (Anderson, 1985); Bucklebrook House, Upper Ballinderry (J138668), 31.iii.2011, MDB. **H40** Londonderry: by Toneduff Bridge, R. Faughan (C517075), male in basidiomycete fungi on *Fagus* logs, 31.x.1977, RA (Anderson, 1978).

Sepedophilus lusitanicus Hammond, 1973 - Rare

In Britain this species is said to occur under *Pinus* logs or in pine litter (Alexander, 2002). This description of habitat does not tally well with details of the two Irish records for Co. Down and North Kerry, both in broadleaf woodland. Added to the Irish list on the basis of specimens collected in Co. Down in 2015 (Anderson and Bryan, in press). The Co. Kerry records are for singletons in *Inonotus dryadeus* on *Quercus* and in *Hypholoma fasciculare* on *Fagus* in Killarney National Park, 2021. **H38** Down: Seaforde Estate (J404435), 2 in *Rhodocollybia* under *Olearia* shrubbery, 1.vi.2015, MDB.

STAPHYLINIDAE Subfamily ALEOCHARINAE slender rove beetles

Aleocharini

Alaobia pallidicornis (Thomson, C.G., 1856) – Widespread

At sap, bracket fungi, and under fungoid bark in forest trees. Local and mainly south-eastern in Britain, but more generally distributed in Ireland. Possibly not an obligate saproxylic. **H33** Fermanagh: Rossvullan Hill, Castle Coole (H264430), under fungoid bark on *Quercus* limb, 28.v.2010, RA; Castle Archdale (H178583), in *Piptoporus* on *Betula*, 2.x.2014, RA; Rossergole, Castle Caldwell (H031208), in *Piptoporus* on *Betula*, 22.iv.2017, MDB; Crom Castle (H358247), fungussed *Betula*, 3.ix.2014, MDB. **H36** Tyrone: Glenmore Wood ASSI (H656607), in *Piptoporus* on *Betula*, 18.x.2014, MDB; Parkanaur (H739614), bark of *Castanea*, 30.vi.2020, MDB. **H37** Armagh: Tynan Abbey Estate (H755414), in *Polyporus squamosus* on *Betula*, 26.vii.2011, RA; Tynan Abbey (H754415), in *Trametes* on ash, 17.viii.2011, RA; Peatlands Park (H904618), in *Trametes* on *Betula*; 20.vi.2020, MDB; Loughgall Forest (H910517), in *Piptoporus* on *Betula*, 5.ix.2017, MDB. **H38** Down: Hydebank Woods (J339678), under fungoid bark of *Acer pseudoplatanus* log, 25.x.2007, RA; Mount Stewart (J550699), in *Russula* under *Fagus*, 11.viii.2010, RA; Dundrum Castle (J406371), a pair in fungi on dead wood, 14.iii.2012, MDB; Lackan Bog (J242370), in *Piptoporus* on *Betula*, 27.vi.2016, RA; Cairn Wood (J452770), in *Piptoporus* on *Betula*, 27.ii.2013, MDB; Seaforde Demesne (J404435), in rotting *Armillaria*, 1.ix.2015, MDB; Stormont Estate (J399751), in *Trametes versicolor* on *Fagus*, 14.vi.2019, RA; Mount Stewart (J559696), *Armillaria* on *Fagus*, 23.x.2017, MDB; Castlewellan Forest (J336374), in *Hericium serratum* on *Fagus*, 19.viii.2017, MDB; Castleward House (J569491), fungus on *Fagus*, 20.v.2015. **H39** Antrim: Glenarm Nature Reserve (D300101), in *Piptoporus* on *Betula*, 8.vi.2011, RA.

Alaobia subglabra (Sharp, 1869) – Rare

In Britain recorded from rotten wood of *Ulmus* and *Fraxinus*. First recorded in Ireland in 2012 but now known from Tomies Wood, Killarney, Co. Kerry (JAG, pers. comm.). **H37** Armagh: Loughgall Country park (H909513), in grass heap, 3.v.2012, MDB, det. RA.

Alaobia taxiceroides Munster, 1932 – Rare

In the nests of birds or mammals in hollow trees. Rare and local in north and central Europe. **H36** Tyrone: Glenmore Wood ASSI (H656607), in *Piptoporus betulinus* on *Betula*, 21.vi.2014, MDB det. RA.

Atheta aeneicollis (Sharp, 1869) – Widespread

Found on a variety of fungi including brackets on dead broadleaf wood and in a bird's nest. **H33** Fermanagh: Inisherk (H361247), in *Inonotus dryadeus* on *Quercus*, 12.vii.2012, MDB; Castle Caldwell (H020606), *Armillaria mellea* under *Fagus*, 19.x.2015, MDB. **H36** Tyrone: Edenderry near Omagh (H492693), on *Tricholoma atrosquamosum*, hedgerow, 15.ix.2007, RA; Parkanaur Forest (H739616), in *Armillaria mellea* under *Prunus laurocerasus*, 21.ix.2013,

MDB; Seskinore Forest (H485664), agarics under *Fagus*, 13.viii.2015, MDB; Pomeroy Forest (H721706), *Rhodocollybia maculata* under *Picea*, 15.viii.2015, MDB. **H37** Armagh: Derrymore House (J053282), in *Polyporus squamosus* on *Acer pseudoplatanus*, 8.vii.2013, MDB; Benburb Heritage Centre (H809517), in *Armillaria mellea* on *Alnus* by towpath, 27.ix.2013, MDB; Ardress House (H917561), in *Agrocybe rivulosa* on wood chips, 1.ix.2017, MDB. **H38** Down: Temple of the Winds (J557693), in decaying *Armillaria mellea*, 5.x.201, RA; Downshire Bridge, Dundrum (J402354), grass heap, 31.viii.2011, MDB; Hollymount NNR (J459432), grass heap; 28.vi.2011, MDB; Dundrum Castle (J406369), beaten off *Trametes versicolor* on *Fagus* log, 29.viii.2013, MDB. **H39** Antrim: Portmore Graveyard (J117682), in *Agaricus angustus*, old graveyard, 29.ix.2009, RA; Bucklebrook House (J138668), in wood pigeon's nest, 31.i.2012, MDB; Laryybane Quarry (D049450), moss litter, 10.vii.2012, MDB; Breesha Plantation, Fair Head (D193417), mossy flush, 17.v.2017, RA/AH. **H40** Londonderry: Springhill House (H868827), in dead rook, 24.ix.2011, RA; (H870828), in *Polyporus squamosus*, 8.x.2012, MDB; Ballynahone More Bog (H865973), agarics under sphagnum *Betula*, 25.x.2017, MDB.

***Atheta aquatica* (Thomson, C.G., 1852) – Uncommon**

A species often found in gilled fungi but also in wood-rotting brackets on dead wood. **H33** Fermanagh: Finlane, Florencecourt (H173327), in *Inonotus radiatus* on *Alnus glutinosa*, 16.iii.2011, MDB; Crom Castle (H358427), on fungussed *Betula*, 3.ix.2014, MDB; Necarne, Irvinestown (H232570), in *Meripilus giganteus* on *Fagus*, 9.ix.2015, MDB. **H36** Tyrone: Parkanaur (H739614), under bark of *Castanea*, 30.vi.2020, MDB; Loughry College (H818746), in *Rhodocollybia* under *Fagus*, 9.vii.2017, MDB. **H37** Armagh: Mullinure, Armagh (H8846), Grange Blundel (H8850) 1888-1892, WFJ (Johnson and Halbert, 1902); Clare Glen (J018431), in *Pseudotrametes gibbosa* on *Prunus laurocerasus*, 27.viii.2014, RA. **H38** Down: Rostrevor Oakwood NNR (J187173), in *Inonotus dryadeus* on *Quercus*, 7.iii.2011, MDB; Shooter's Island (J494471), on deer faeces in oakwood; 23.ii.2012, RA; Dundrum Castle (J404371), in *Polyporus squamosus* on fallen *Aesculus*, 23.vi.2014, MDB. **H39** Antrim: Linford Water (D312080), moss by stream, 21.iv.2008, RA; Bucklebrook House (J138668), under bark on log, 31.iii.2011, MDB.

***Atheta aquatilis* (Thomson, C.G., 1887) – Widespread**

Habitat preferences a little less clear than those of the previous species but a mixture of riparian, patch and wood rot fungi. **H33, H36, H37, H38, H39, H40.**

***Atheta autumnalis* (Erichson, 1839) – Rare**

Added to the Irish list by Anderson (2018) from a site on the west shore of Lough Neagh. Generally rare in Britain and recorded mainly from the south-west under bark of riparian trees by fast-flowing streams. A second Irish site on the east shore of Lough Derg, North Tipperary is now known (17.x.2021, RA). **H36** Tyrone: Brookend NR (H952724), a male and female under

bark of cut *Alnus glutinosa* stems, lakeshore fen, 30.iv.2018, RA.

***Atheta basicornis* (Mulsant and Rey, 1852) – Scarce**

Under bark on periodically inundated dead branches and trunks in wet places or and riparian habitats; feeds on fungal material. **H33** Fermanagh: Rossyvullan Hill, Castle Coole (H264430), under fungoid bark of *Quercus*, 28.v.2010; Munilly Bridge, Old Ulster Canal (H490245), under *Salix* bark, 19.vii.2011, RA. **H37** Armagh: Oxford Island (J047621), in fungus on willow, 25.iii.2012, MDB; Loughgall Country Park (H909512), reed litter under alder/willow, 8.i.2014, RA. **H38** Down: Murlough NNR (J413345), in *Agaricus campestris*, dunes, 23.ix.2006, RA. **H39** Antrim: RSPB, Portmore Lough (J145688), under bark of *Salix* and *Alnus glutinosa*, 19.vi.2009, 26.vi.2009, RA; Portmore Estate (J121668), moss on *Salix* branches, 8.x.2009, RA.

***Atheta britanniae* (Bernhauer and Scheerpeltz, 1926) – Widespread and common**

A member of the *Atheta crassicornis* group of species which have strong associations with decaying gilled fungi such as *Russula* but also species such as *Armillaria* and wood rot fungi such as *Polyporus squamosus* and *Polyporus betulinus*. About 50 sites recorded in Northern Ireland. **H33, H36, H37, H38, H39, H40.**

***Atheta castanoptera* (Mannerheim, 1830) - Widespread and common**

A rather similar profile to that of *Atheta britanniae* but with about 50% more site records in Northern Ireland and found on a wider range of wood-rot fungi. **H33, H36, H37, H38, H39, H40.**

***Atheta crassicornis* (Fabricius, 1792) - Widespread and common**

Very similar profile and abundance to that of *Atheta castanoptera*. **H33, H36, H37, H38, H39, H40.**

***Atheta paracrassicornis* Brundin, 1954 – Uncommon**

First recorded in Ireland by A. P. Foster at Crom Castle, Co. Fermanagh in 1992 (Anderson and Foster, 2011). Now known from a number of sites, mainly west of the River Bann in Northern Ireland. Like other species in the *Atheta crassicornis* group (*A. britanniae*, *A. crassicornis*) there is a strong association with gilled fungi but it is also found on wood-rot fungi and mainly in old growth forests. There is only a single record for Britain but it has been recorded from 13 sites in Northern Ireland and two in southern Ireland. Northern in Europe – mainly Scandinavia. **H33** Fermanagh: Inishfendra (H373237), FIT, 5.vii.1993 – 4.viii.1993, APF; Florencecourt (H181346), in *Boletus chrysenteron* under *Quercus*, 31.vii.2010, RA; Derrykerrib, Upper Lough Erne (H422212), shoreline vegetation, 2.viii.2011, RA; Inisherk Island (H362246), *Inonotus dryadeus* on *Quercus*, 12.vii.2012, MDB; Old Crom Castle (H366240), *Inonotus dryadeus* on *Quercus*, 12.vii.2012, MDB; Colebrooke (H408450), agaric on *Quercus*, 25.x.2012, MDB; Crom Castle (H357246), *Entoloma sinuatum* under *Quercus*, 3.ix.2014, MDB; Castle Archdale (H175584), on *Armillaria* under *Quercus*, 2.x.2014, MDB; Ely Lodge Forest (H172519), fungi under *Fagus*, 5.ix.2015, MDB. **H36** Tyrone: Parkanaur

Forest (H736615), *Armillaria* on *Fagus*, 21.ix.2013, MDB; Glenmore Wood ASSI (H655618), *Rhodocollybia* under *Fagus/Corylus*, 18.ix.2013, MDB; Fardross Forest (H521486), fungi in mixed wood, 9.ix.2015, MDB. **H37** Armagh: Loughgall Forest (H910513), *Piptoporus* on *Betula*, 14.v.2014, MDB.

***Atheta pilicornis* (Thomson, 1852) – Rare**

Chiefly subcortical, often with scolytids; adults also reported from wood-decay and terricolous fungi, moss and among dead leaves, but larval habits not known; damp woodlands. **H37** Armagh: Glebe Hill, Tandragee (J033453), 1 male in badger latrine, hedgerow, 25.ix.2018, RA. **H38** Down: Belvoir Forest (J339696), 1 male in bolete *Xerocomus chrysenteron* under *Quercus*, 11.ix.1997, RA; Dundrum Castle woods (J404370), 1 female on *Polyporus squamosus* on horse chestnut, 20.vii.2009, RA.

***Bessobia fungivora* (Thomson, 1867) – Rare/doubtful**

In rotting fungi or on fungoid wood in forests; probably not an obligate saproxylic. Historically known only from a record of R. E. Dillon for Clonbrock, a specimen having been determined by J. N. Halbert (Johnson and Halbert, 1902). Dillon has become notorious for some of the outlandish records claimed for Clonbrock. There is a modern record for a female from Co. Down but, although published, is slightly uncertain. No male of this species has been found. **H38** Down: Hollymount NNR (J465440), in *Stereum* bracket fungi on *Fagus* logs, 18.i.2011, RA (Anderson, 2011).

***Dinaraea aequata* (Erichson, 1837) – Common and widespread**

Under bark of various trees, usually near fungoid growths. **H33, H36, H37, H38, H39, H40.**

***Dinaraea linearis* (Gravenhorst, 1802) – Rare old growth species**

Under bark. **H37** Armagh: Derryadd Lough (H911606), in *Piptoporus* on *Betula*, 11.v.2012, RA; Loughgall Country Park (H909513), under bark, dead alder, 3.v.2012, MDB; Washing Bay, Lough Neagh (H902658), under alder bark, 31.i.2013, RA. **H39** Antrim: Rea's Wood NNR (J139851), moss on alder stumps, 16.xii.2014, MDB.

***Microdota benickiella* Brundin, 1948 – Widespread**

Recorded infrequently from the gills of agaric fungi in woodlands. May be particularly associated with *Clitocybe* species, but also found with *Polyporus squamosus* and *Piptoporus betulinus* on rotting wood. **H33, H36, H37, H38, H39.**

***Traumaecia picipes* (Thomson, 1856) – Uncommon**

In fruit bodies of wood-decay fungi such as *Piptoporus betulinus*, *Meripilus giganteus* and *Hypholoma* as well as numerous mycorrhizal species; overwinters in tussocks, moss, compost, etc. Identified as an indicator species of “well-developed woodland habitat” (Good and Butler, 1995). The very closely related *Atheta olbrichi* Scheerpeltz, 1947 has been recorded from southern counties of Ireland (Good and Anderson, 2017) but not so far, from Northern Ireland. Its taxonomic position and validity as a separate species are uncertain. It may be a form of

Traumaecia picipes. **H33** Fermanagh: Inisherk Island (H357423), 31.iii.1997, RA; (H362246), 12.vii.2012, MDB; Finlane, Florencecourt (H173327), 16.iii.2011, RA; Colebrooke Park (H406447), 25.x.2012, MDB. **H36** Tyrone: Baronscourt Estate (C355826), 16.v.2006, RA; Parkanaur Forest (H739614), 30.vi.2020, RA; Brantry Lough (H750539), 28.viii.2012, MDB; Parkanaur Forest (H736617), 6.ii.2013; (H739614), 30.vi.2020, RA; Knockmany Forest (H543558), 25.x.2014, MDB. **H37** Armagh: Tynan Abbey (H755414), 26.vii.2011; (H760426), 17.viii.2011, RA; Slieve Gullion Forest (J037194), 8.iii.2012, RA; Derrymore House (J056280), 8.viii.2012, MDB; (H053281), 8.ix.2015, MDB; Clare Glen (J019440), 17.v.2014, RA; The Argory (H870574), 26.iv.2011, MDB. **H38** Down: Barnett's Demesne (J321687), 12.x.1996; (J318685), 4.ii.2018, RA; Belvoir Forest (J346694), 16.iv.2004; Mount Stewart (J552695), 13.ix.2003, 17.x.2009, 13.viii.2010, RA; Killynether Wood (J472722), 11.viii.2007, RA; Helen's Tower (J489772), 26.vii.2008, 10.ii.2011, RA; Rostrevor Oakwood NNR (J187173), 7.iii.2011, MDB; Cairn wood (J452770), 22.vii.2013, MDB; Seaforde Demesne (J404435), i.ix.2015, MDB; Castlewellan Forest (J336374), 19.viii.2017; (H336374), 19.vii.2017, MDB; Castleward House (J571503), 23.viii.2011; (J578495), 17.x.2014, RA; Dundrum Castle (J406369), 29.viii.2013, MDB; Tollymore Forest (J335324), 10.viii.2012, MDB; Cairn Wood (J452770), 22.vii.2013, RA; Seaforde Estate (J404435), 1.vii.2015, MDB. **H39** Antrim: near Lough Neagh (O'Mahony, 1929); Shane's Castle (J1188), vi.1902, CWB (Halbert, 1910b); Belfast Castle (J327793), 11.vii.2004, Ballylough Bog (C946371), 29.ix.2017, RA; Carnfunnock Country Park (D3806), 10.ix.2011, MDB.

***Bolitochara obliqua* Erichson, 1837 – Common and widespread**

Under bark of dead wood of various deciduous trees, especially associated with the small bracket fungus *Trametes versicolor*; adult is a fungal feeder, larvae also feeding on phloem and dead larvae. Common in Britain and Ireland. **H33, H34, H36, H37, H38, H39.**

***Bolitochara tecta* Assing, 2014 nec *lucida* (Gravenhorst, 1802) – Scarce**

Mainly found in fleshy fungi on old stumps. It has undoubtedly increased in the period 2010-2021 from very localised and rare previously. **H36** Tyrone: Parkanaur Forest (H736614), in *Armillaria*, 21.ix.2013, MDB; Glenmore Wood (H656607), in *Piptoporus* on *Betula*, 21.vi.2014, MDB; Drum Manor (H760783), in *Hypholoma* under *Cupressus*, 13.ix.2019, MDB; Fardross Forest (H522489), in fungi under *Fagus*, 9.ix.2015, MDB. **H37** Armagh: Peatlands Park (H904618), in *Trametes versicolor* on *Betula*, 20.vi.2020, MDB; Ardross House (H917561), in *Agrocybe rivulosa* on wood chips, 1.ix.2017, MDB. **H38** Down: Stormont Estate (J399751), in *Trametes versicolor* on *Fagus*, 14.vi.2019, RA. **H39** Antrim: Fair Head and Murlough Bay (D2041), 15.vi.1992, KNAA.

***Leptusa fumida* (Erichson, 1839) – Common and widespread**

Found under bark on dead wood of various trees, also in rot holes. Feeds mostly on detritus and fungi, but will eat insect larvae and eggs. Widespread in Ireland. **H33, H36, H37, H38,**

H39, H40.

***Leptusa norvegica* Strand, A., 1941 – Established introduction – rare**

Lives under bark in the runs of ambrosia beetles, etc, on conifer logs. **H39** Antrim: Portglenone Forest (C976031), in *Tomicus* burrows on *Pinus sylvestris*, SC (Anderson and Clawson, 2004).

***Leptusa pulchella* (Mannerheim, 1830) – Widespread**

Under dead bark on a wide variety of tree species. Mainly in ancient woodlands in Britain, especially where wet. Listed as '*Leptusa analis*' in Johnson and Halbert (1902). mainly reported from northern counties of Ireland, where it is widespread. **H33** Fermanagh: Finlane Florencecourt (H17330), under bark, *Fagus* log, 16.iii.2011, RA; Castle Archdale (H183169), *Armillaria* under *Fagus*, 2.x.2014, MDB. **H36** Tyrone: Caledon Deer Park (H7543), 16.viii.2006, KNAA. **H38** Down: Rostrevor Oakwood NNR (H185174), under bark of *Quercus* logs, 13.v.2000 (Anderson, Simms and Nelson, 2000); Murlough NNR (J411351), under dying elm bark, 15.xi.2010; Hollymount Wood NNR (J465440), in *Trametes versicolor*, ash log, 18.i.2011, RA; The Drinns, Tollymore Forest (J317314), under bark, 6.iv.2011, MDB; Mallard plantation, Castleward (J555490), under bark of *Pseudotsuga* log, 21.viii.2010, RA; Shooter's Island, Quoile (J494470), 1 in deer dung (!), 23.ii.2012, MDB; Tullyframe Wood, Mourne Park (J264169), under bark on *Fagus*, 27.iii.2012, RA; Dundrum Castle woods (J406369), under bark, log, 29.viii.2013, MDB; Lackan Bog (J242370), *Piptoporus betulinus* on *Betula*, 27.vi.2016, RA. **H39** Antrim: Murlough Bay (D2041), one under bark, ix.1901, GWC det. JNH; Great Deer Park, Glenarm (D2911), 20.v.2006, KNAA; Glenarm Nature Reserve (D301101), under bark of *Quercus* log, 8.vi.2011, (D300100), 14.vi.2011, in *Piptoporus* on *Betula*, both RA; Ballylough Bog (C946371), *Piptoporus betulinus* on *Betula*, 29.ix.2017, RA. **H40** Londonderry: Altnaheglish Forest (C720018), Banagher, *Picea sitchensis* stump, 6.viii.2005, RA.

***Leptusa ruficollis* (Erichson, 1839) – Recent arrival**

Found under bark on deadwood; favours thin barked woody plants notably *Tilia*. Occurs in ancient woodlands in Britain and appears to be a recent arrival in Ireland, known only from the Ards Peninsula in Co. Down. Appears to have arrived in this area at about the same time as the rare bracket fungus *Hericium cirrhatum*, new to Ireland, on *Fagus*. **H38** Down: Mount Stewart Estate (J554694), 1 in rotting *Russula* under *Fagus*, 13.viii.2010, RA; Temple of the Winds, Mount Stewart (J557693), 1 under fresh bark on fallen *Fagus* bough, 5.x.2010, RA.

Autaliini

***Autalia impressa* (Olivier, 1795) – Widespread and common**

Often abundant in gilled fungi such as *Russula* but also *Armillaria* and wood rot fungi such as *Polyporus squamosus*, *Fistulina hepatica* and *Piptoporus betulinus*. **H33, H36, H37, H38,**

H39, H40.

***Autalia longicornis* Scheerpeltz, 1947 – Recent immigrant, rare**

A fairly recent arrival in Ireland and, while spreading, still a much less frequent species than the last. **H37** Armagh: Derrymore House (J054823), in *Meripilus giganteus* on *Fagus*, 8.ix.2015, MDB. **H38** Down: Huntley Park, Banbridge in *Rhodocollybia* under *Fagus*, (J118474), 15.viii.2017, MDB; Seaforde Estate (J404435), *Rhodocollybia* under *Olearia*, 1.ix.2015, MDB. **H39** Antrim: Portmore Graveyard (J117684), in *Pholiota alnicola* on *Alnus glutinosa*, 29.ix 2009, RA.

Gyrophaeenini

These beetles are all very small and associated with fungal fruiting bodies, generally wood decay fungi but not exclusively so. The larvae are spore-feeders.

***Agaricochara latissima* (Stephens, 1832) – Common and widespread**

One of the commonest species (37 sites). **H33, H36, H37, H38, H39, H40.**

***Gyrophaena affinis* Mannerheim, 1830 – Common and widespread**

The commonest *Gyrophaena* (41 sites). **H33, H36, H37, H38, H39, H40.**

***Gyrophaena bihamata* Thomson, C.G., 1867 – Scarce**

On a variety of agarics and bracket fungi in predominantly wet broadleaved woodland. **H33** Fermanagh: Crom Castle Estate (H360247), agarics growing under mature *Fagus*, 16.ix.2016, MDB. **H36** Tyrone: Seskinore Forest (H484645), on *Paxillus involutus* under *Betula*, 13.viii.2014, MDB; Pomeroy Forest (H701726), on *Rhodocollybia maculata* under conifers, 15.viii.2015, MDB. **H37** Armagh: Derrymore House (J053282), on *Polyporus squamosus* on sycamore, 8.vii.2013, MDB. **H39** Antrim: Shane's Castle (J126875), in *Hirneola* on sycamore, 3.vii.2004, RA; Rea's Wood NNR (J140851), in *Mycena inclinata* on *Salix*, 11.x.2013, RA; in *Clitocybe* under *Picea*, 30.vi.1986, RCW (Welch, 1986). **H40** Londonderry: Somerset Forest (C85263016), on agarics under *Fraxinus*, 4.ix.2014, MDB; (C853302), fungi on split *Fraxinus*, 4.ix.2014, MDB; Ballynahone More Bog (H865973), on agarics in sphagnum under *Betula*, 25.x.2017.

***Gyrophaena congrua* Erichson, 1837 – Uncommon**

Almost entirely associated with small agarics such as *Rhodocollybia maculata* in wet broadleaf woods. Very easy to overlook. But certainly not as rare in Northern Ireland as in Britain. First recorded (in Ireland) on 1.viii.2013 from Ardress House, Co. Armagh. **H33** Fermanagh: Crom Castle Estate (H360247), on agarics under *Fagus*, 16.ix.2015, MDB; Castle Caldwell (H020606), *Armillaria* under *Fagus*, 19.x.2015, MDB; Rossergole, Castle Caldwell (H023606), agarics under *Alnus/Salix*, 17.viii.2015, MDB. **H36** Tyrone: Glenmore Woods ASSI (H656608), on *Mycena* under *Corylus*, 18.x.2014, MDB; Seskinore Forest (H484645), on *Paxillus* under *Betula*, 13.viii.2015, MDB; Parkanaur Forest (H737615), on *Rhodocollybia*

under mixed woods, 18.viii.2019, MDB; Drumcairne Forest (H877707), in *Mycena* under *Quercus*, 11.ix.2019, MDB; Knockmany Forest NR (H541552), on *Rhodocollybia* under conifers, 31.vii.2017, MDB. **H37** Armagh: Ardress House (H918558), on agarics under *Fagus* and *Quercus*, 1.viii.2013, MDB. **H39** Antrim: Rea's Wood NNR (J140851), in *Mycena inclinata* on *Salix*, 11.x.2013, MDB. **H40** Londonderry: Somerset Forest (C846304), 8.ix.2014, on agarics under *Fraxinus*, 8.iv.2014, MDB; Springhill Estate (H868827), on *Clitocybe nebulosa* under *Fagus*, 10.x.2017, MDB; Ballynahone More Bog (H865973), on agarics in sphagnum under *Betula*, 25.x.2017, MDB.

***Gyrophæna fasciata* (Marsham, 1802) – Common and widespread**

Another common species (35 sites). **H33, H36, H37, H38, H39, H40.**

***Gyrophæna gentilis* Erichson, 1839 – Common and widespread**

Another common species (31 sites). **H33, H36, H37, H38, H39, H40.**

***Gyrophæna hanseni* Strand, A., 1946 – Rare**

H33 Fermanagh: Inisherk Island (H361247), on *Inonotus dryadeus* at base of oak, 12.vii.2012, MDB; Crom Castle Estate (H360247), on agarics under *Fagus* and under young oak, 16.ix.2015, MDB.

***Gyrophæna joyi* Wendeler, 1924 – Uncommon**

Commonest on small agarics but hosts include honey fungus *Armillaria* in western areas. **H33** Fermanagh: Inishfendra (H373237), FIT, 15.vii.- 24.viii.1993, APF; Inisherk Island (H361247), fungus on *Quercus*, 12.vii.2012, MDB; Crom Castle (H358247), on *Armillaria* under *Quercus/Corylus*, 3.ix.2014, MDB; Castle Caldwell Forest (H020606), *Armillaria* under *Fagus*, 19.x.2015, MDB; (H018606) on small pink fungi under *Alnus/Salix*, 17.viii.2015, MDB; Florencecourt (H176331), *Rhodocollybia* in mixed woods, 17.vii.2019; Ely Lodge Forest (H175916), fungi on log, 5.ix. 2015, MDB. **H36** Tyrone: Parkanaur Forest (H738611), small agarics under *Betula*, 29.xii.2014, MDB. **H37** Armagh: Benburb Heritage Centre (H804515), on *Rhodocollybia* under *Fagus*, 27.ix.2013, MDB; Loughgall Country Park (H903516), *Marasmius oreades* ring under *Fagus*, 9.v.2015, MDB. **H38** Down: Clandeboy Estate (J4977), on small agarics, 10.viii.1972, CAMR. **H39** Antrim: Rea's Wood NNR (J142853), *Pluteus cervinus* on *Salix*, 12.ix.2007, RA; (J143855), *Armillaria mellea* on *Salix*, 11.x.2013, MDB.

***Gyrophæna manca* Erichson, 1839 – Scarce**

The larvae feed especially on spores of *Polyporus squamosus* and it is rarely found away from this species. Roadside *Fraxinus* sporting large *P. squamosus* fruitbodies can have this species. Invariably on *P. squamosus* on *Sambucus*, *Fagus*, *Acer pseudoplatanus*. A Palearctic species, widespread in Europe, but rather local in Britain and Ireland. First recorded here by Good (1997) as *G. angustata*. **H33** Fermanagh: Crom Castle (H358247), 3.ix.2014, MDB. **H36** Tyrone: Parkanaur Forest (H739616), 21.ix.2013, MDB; Knockmany Forest NR (H543553), 31.vii.2017, MDB. **H37** Armagh: Tynan Abbey Estate (H755414), 26.vii.2011, RA/MDB;

Derrymore House (J053282), 8.vii.2013, MDB; Loughgall Forest (H913516), on *Rhodocollybia* under *Fagus* (!), 5.ix.2017, MDB. **H38** Down: Killynether Wood (J475722), 29.vi.2012, RA; Dundrum Castle Woods (J404371), 23.vi.2014, MDB; Ballymenoch Park, Holywood (J408794), 19.vi.2018, RA; Scrabo Road, Newtownards (J481729), 21.vi.2018, RA; Murlough House Woods (J414352), RA; Huntley Park, Banbridge (J118474), 11.viii.2017, MDB. **H39** Antrim: Bucklebrook House (J138669), 16.iv.2011, MDB. **H40** Londonderry: Springhill House (H870828), 8.x.2012, MDB.

***Gyrophæna minima* Erichson, 1837 – Uncommon**

Particularly associated with sulphur tuft *Hypholoma fasciculare* on conifer wood. Can be very common on this species at some of the sites listed. **H33** Fermanagh: Necarne, Irvinestown (H239569), *Hypholoma* on *Quercus*, 9.ix.2015, MDB. **H36** Tyrone: Parkanaur (H737610), in rotting *Armillaria*, mixed wood, 29.xii.2014, MDB; (H738613) in *Hypholoma fasciculare* on conifer wood, 18.viii.2019, MDB; Drum Manor (H760783), in *H. fasciculare* under *Cupressus*, 13.ix.2019, MDB; Drumcaine Forest (H877707), on *H. fasciculare* in broadleaf woods, 11.ix.2019, MDB; Knockmany Forest (H941552), on *Rhodocollybia* under conifers, 31.vii.2017, MDB. **H37** Armagh: Peatlands Country Park (H904618), on *Trametes versicolor* on *Betula*, 20.vi.2020, MDB. **H38** Down: Belvoir Forest, in *Stereum hirsutum* on a *Prunus laurocerasus* log, 1.ix.1997, RA; Castlewella Forest (J335378), *H. fasciculare* on dead conifer wood, 20.viii.2017, MDB; Huntley Park, Banbridge (J118474), *H. fasciculare* under *Quercus*, 15.viii.2017, MDB. **H39** Antrim: Ballycastle, GWC, det. JNH (Johnson and Halbert, 1902).

***Gyrophæna munsteri* Strand, A., 1935 – Uncommon**

Mainly on mycorrhizal agarics such as *Armillaria mellea*, *Clitocybe geotropa*, *C. nebularis*, *Entoloma sinuatum*, *Rhodocollybia butyracea*. First recorded for Ireland at Rea's Wood in Antrim on 11.x.2013. **H33** Fermanagh: Inisherk Island (H3561247), 12.vii.2012, MDB; Crom Castle Estate (H358247), 3.ix.2014, MDB; Florencecourt (H178334), 1.x.2014, MDB; Castle Archdale (H183589), 12.x.2014, MDB; Crom Castle Estate (H360247), 16.ix.2015, MDB; Castle Caldwell Forest (H020606), 19.x.2015, MDB; Ely Lodge Forest (H184510), 5.ix.2015, MDB. **H36** Tyrone: Drum Manor (H764776), 6.ix.2014, MDB; Parkanaur Forest (H738611), 29.xii.2014, MDB; Glenmore Wood (H656608), 18.x.2014, MDB. **H37** Armagh: Loughgall Country Park (H902515), 26.ix.2012, MDB; Loughgall Forest (H912513), 28.viii.2013, MDB; Derrymore House (J053282), 8.vii.2013, MDB; Benburb Heritage Centre (H804515), 27.ix.2013, MDB. **H39** Antrim: Rea's Wood NNR (J140851), 11.x.2013, MDB. **H40** Londonderry: Springhill Estate (H868827), 10.x.2017, MDB.

***Gyrophæna poweri* Crotch, 1867 – Rare**

Known only from wet riparian woods around Lower Lough Erne, Fermanagh at present. **H33** Fermanagh: Castle Caldwell Forest (H020606), in *Armillaria* under *Fagus*, 19.x.2015, MDB;

Rossergole (H027608), in *Armillaria*, shoreline wood, 17.viii.2015, MDB; Ely Lodge (H184510), brown fungus under *Fagus*, 5.ix.2015, MDB.

***Gyrophaena pulchella* Heer, 1839 – Widespread**

Widespread and therefore much less rare than in Britain (22 sites). Mainly in the west and on mycorrhizal agarics such as *Armillaria mellea*, *Clitocybe geotropa*, *C. nebularis*, *Entoloma sinuatum*, *Rhodocollybia butyracea*, *Marasmius wynnei*. **H33** Fermanagh: Crom Castle Estate (H357426), 3.ix.2014, MDB; Florencecourt (H178334), 1.x.2014, MDB; Castle Caldwell Forest (H020606), 19.x.2015, MDB; Rossergole (H023606), 17.viii.2015, MDB; Ely Lodge Forest (H172519), 5.ix.2015, MDB. **H36** Tyrone: Drum Manor (H756777), 18.x.2010, MDB; Knockmany Forest (H553560), 30.viii.2017, RA; Parkanaur Forest (H736608), 28.ix. 2015, MDB; Glenmore Wood ASSI (H652609), 19.ix.2019, RA; Knockmany Forest NR (H543553), 31.vii.2017, MDB; Loughry Agricultural College (H818746), 9.vii.2017, MDB; Fardross Forest (H521486), 9.ix.2015, MDB. **H37** Armagh: Loughgall Forest (H911517), 26.ix.2012, MDB; Annagarriiff NNR (H903116), 3.ix.2013, MDB; Benburb Heritage Centre (H804155), 27.ix.2013, MDB; Loughgall Forest (H913516), 5.ix.2017, MDB; Address House (H917561), 1.ix.2017, MDB; Loughgall Country Park (H903516), 9.v.2015, MDB. **H38** Down: Belvoir Forest (J332692), 27.x.1993, RA; Dromantine College (J077361), 5.x.2012, RA; Castleward House (J5678495), 17.x.2014, RA; Castlewellan Forest Park (J327364), 31.viii.2014, MDB. **H39** Antrim: Rea's Wood NNR (J143855), 11.x.2013, MDB.

***Anomognathus cuspidatus* (Erichson, 1839) – Scarce**

Under fungoid bark of dead *Fagus*, *Quercus*, etc. **H33** Fermanagh: Colebrooke Park (H405445), under bark, *Quercus* limb, 25.x.2012, RA. **H36** Tyrone: Parkanaur Forest (H733612), under bark dead oak, 1.vi.2020, MDB. **H37** Armagh: Tynan Abbey Estate (H761428) under bark, *Quercus* limb, 21.vi.2011, RA; Loughgall Country Park (H910518), *Piptoporus* on *Betula*, 9.v.2015, MDB. **H38** Down: Morelands Meadow, Belvoir (J337697), 18.xi.1992, 15.iv.2004, RA; Stormont Estate (J397746), 7.v.1994, 13.v.1994, RA; Hydebank Woods (J342677), 25.x.2007, RA; Mount Stewart (J555694), 16.viii.2010, RA; Temple of the Winds (J557693), 5.x.2010, RA. **H39** Antrim: Lagan Meadows, Belfast (J334699), decaying *Bjerkandera adusta* bracket fungi on an *Acer pseudoplatanus* stump, 11.iv.1993, RA (Anderson, 1995); Portmore Lough, RSPB Reserve (J108685), 19.vi.2009, RA; Moss Plantation, Randalstown (J093893), 16.vii.2010, RA.

***Homalota plana* (Gyllenhal, 1810) – Uncommon**

Under bark on dead *Fagus* etc; adult feeds on detritus and fungi. **H36** Tyrone: Parkanaur Forest (H737616), under bark *Pinus* log, 6.ii.2013, RA/MDB. **H37** Armagh: Annagarriiff NNR (H902616), *Acer pseudoplatanus* bark, 9.v.2000, RA; Tynan Abbey Estate (H755414), bark of *Fagus*, 26.vii.2011, RA. **H38** Down: Morelands Meadow (J337697), *Fagus* logs, 18.xi.1992,

RA; Belvoir Forest (J341695), bark of *Pinus sylvestris*, 11.iv.1995, RA; Hydebank woods (J342677), bark, sycamore, 25.x.2007, RA; Mount Stewart (J550699), in rotting *Russula*, 11.viii.2010, RA; Castleward (J572502), bark, ash, 19.iii.2011, RA; Shooter's Island, Quoile (J494471), under *Acer pseudoplatanus* bark, 23.ii.2012, RA; Castlewellan Forest (J339373), under bark, felled conifer, 29.vii.2020, MDB. **H39** Antrim: Farr's Bay NNR (J089870), bark, *Picea* log, 4.vii.1986, RCW (Welch, 1986); Belfast Castle (J327793), fungoid bark on *Fagus*, 11.vii.2004, RA; Moss Plantation, Shane's Castle (J094893), bark, *Quercus*, 20.viii.2010, RA; Bucklebrook House (J13768), baited trap, sugared wine, 21.vii.2020, MDB.

***Cypha seminulum* (Erichson, 1839) – Extinct**

In rotting wood, fungi, under bark and in moss; elm and sycamore. Ireland (Haliday collection). **H40** Londonderry: Foyle District, CWB (Buckle, 1900; Johnson and Halbert, 1902).

***Oligota apicata* (Erichson, 1837) – Rare**

Occurs in bracket fungi on trees: reported from *Stereum hirsutum*, *Polyporus squamosus*, *Trametes versicolor*; possibly preys on *Cis* beetle larvae; also recorded in leaf litter inside a hollow *Quercus*, under *Fagus* bark, etc. **H36** Tyrone: Derrygorry Brook, Favour Royal Forest (H624519), in a grass heap, 8.x.2015, MDB. **H37** Armagh: Loughgall Country Park (H904112), in rotting *Armillaria mellea* on *Aesculus*, 9.v.2015, MDB. **H38** Down: Helen's Tower, Clandeboye (J488774), in rotting *Trametes/Bjerkandera* on *Fagus* logs, 10.ii.2011, RA. **H39** Antrim: Shane's Castle Demesne (J1288), Lough Neagh, two sifted from debris, vi.1923, OEJ (Janson, 1924).

Oxypodini

***Ischnoglossa prolixa* (Gravenhorst, 1802,) – Rare**

Found beneath bark on freshly dead timber; widespread on the Continent. **H37** Armagh: Slieve Gullion Forest Park (J037194), 1 under bark of dead standing *Pinus sylvestris*, 8.iii.2012, RA; Loughgall (H909513), under bark of dead alder, 3.v.2012, MDB. **H38** Down: Belvoir Forest (J342694), in *Bjerkandera adusta* on *Quercus* stump, 23.iv.2004, RA; Leitrim Lodge (J223256), under bark of dead standing *Pinus contorta*, 29.ii.2012, RA, (H227251), under bark, *Pinus sylvestris* log, 29.ii.2012, RA.

***Phloeopora testacea* (Mannerheim, 1830) – Uncommon**

Predatory, beneath bark on deadwood of various broad-leaved trees. *Phloeopora reptans* (synonym) reported from Ireland by Haliday and there are Irish-taken specimens in his collection (Johnson and Halbert, 1902). **H33** Fermanagh: Florencecourt (H181346), 31.vii.2010, RA.; Colebrooke Park (H407449), 25.x.2012, RA. **H36** Tyrone: Drumcaine Forest (H877707), 9.ix.2019, MDB. **H37** Armagh: Annagarraiff NNR (H902616), 29.v.2000, RA; Tynan Abbey (H757427), 29.ix.2011, RA. **H38** Down: Belvoir Forest (J332692), 28.ix.1993; (J341695), 12.iv.1995, RA; Redburn Country Park (J401774), 6.ix.2006, RA; Hydebank Woods (J342677), 25.x.2007, RA; Castle Espie (J495672), 26.viii.2009, RA. **H39** Antrim: Barnett's

Park (J321687), 19.v.1994, RA; Belfast Castle (J327793), 11.vii.2004, RA; Ram's Island, Lough Neagh (J098721), 4.vi.2005, RA; Shane's Castle Estate (J194881), 1.vii.2010, RA; Moss Plantation, Randalstown (J092893), 16.vii.2010, RA; Lady Dixon Park, Belfast (J305676), in soft-rotted dead *Acer pseudoplatanus*, 1.xii.2015, RA. **H40** Londonderry: Leganannon Pot (C752123), 4.iv.1999, RA.

***Oxypoda vittata* Märkel, 1842 – Doubtful**

H39 Antrim: 'Ballyclare' (J2891), CWB (Johnson and Halbert, 1902).

Phytosini

***Placusa tachyporoides* (Waltl, 1838) – Rare**

Added to the Irish List by Anderson and Bryan (2023). In Britain found in southern England as far north as the south Midlands mainly at sap on *Quercus* and *Castanea* (Alexander, 2002). They are also said to inhabit the galleries of bark beetles (Scolytinae) but examination of stomach contents shows that they feed on fungal hyphae and spores (Klimaszewski *et al.*, 2001). **H36** Tyrone: Parkanaur Forest (H732612), 10, in sugared red wine bait trap, 12.vi.2021, MDB; Glenmore ASSI (H653611), 2, in sugared red wine bait trap, 7.vii.2021, MDB. **H39** Antrim: Rea's Wood (J13938502), one, in sugared red wine bait trap, 9.vii.2021, MDB.

STAPHYLINIDAE SUBFAMILY SCAPHIDIINAE – shining fungus beetles

***Scaphisoma agaricinum* (Linnaeus, 1758) – Uncommon**

Amongst decaying wood and at fungal fruit bodies. **H33** Fermanagh: Inishfendra, Crom, FIT, 15.vii.1993–24.viii.1993, APF; Molly Mountain, 23.vi.1995, RA; Castle Coole Park, 2.vi.1992 and 18.v.2006, KNAA; Colebrooke Park (H406446), under bark, *Quercus* branch, 25.x.2012, RA. **H36** Tyrone: Caledon Park, 16.viii.2006, KNAA; Brookend NR, Lough Neagh, 8.v.2007, RA. **H37** Armagh: Lowry's Lough, sweeping gorse, WFJ (Johnson, 1892a; Johnson and Halbert, 1902); Derryadd Lough (H914609), in old *Piptoporus*, 11.v.2012, MDB; Derrymore House (J056280), on *Bjerkandera*, *Fagus* stump, 8.viii.2012, MDB; Ardress House (H914560), on agarics under *Fagus*, 31.viii.2013, MDB. **H38** Down: Dundrum Castle (J406371), in fungi on dead wood, 14.iii.2012, MDB; Murlough NNR (J415352), in *Polyporus squamosus* on *Acer pseudoplatanus*, 11.vi.2020, RA. **H39** Antrim: Shane's Castle Demesne, Lough Neagh, June 1923, OEJ (Janson, 1924). Great Deer Park, Glenarm, 28.vii. and 19.viii.2006, KNAA; Lady Dixon Park, Belfast (J302679), in slime mould *Enteridium* under bark of *Alnus*, 14.v.2020, RA. **H40** Londonderry: Ness Wood ASSI (C524113), under bark, *Corylus*, 31.v.2017, MDB.

***Scaphisoma boleti* (Panzer, 1793) – Scarce**

Similar habits to the last. **H33** Fermanagh: Summerhill Lough, xii.1905, WFJ (Johnson, 1906); Florencecourt, 21.vi.2010, RA; Filbert Hill, Castle Coole, 26.vi.2010, RA. **H37** Armagh: Tynan Abbey, 1.vii.2011, RA. **H38** Down: Castlewellan Forest (J327364), in agarics, mixed

woods, 31.viii.2014, MDB; Murlough House Woods (J414351), in *Polyporus squamosus* on *Fraxinus*, 16.vii.2018, RA. **H39** Antrim: Rea's Wood, Antrim, 30.vi.1986, RCW (Welch, 1986).

STAPHYLINIDAE SUBFAMILY PIESTINAE

Siagonium quadricorne Kirby, 1815 – Scarce

Saprophagous beneath moist sappy bark on the freshly dead wood of various broad-leaved trees, especially elm. Old records from southern counties, where still present; recently appeared in northern counties. **H37** Armagh: Tynan Abbey (H755414), in *Polyporus squamosus* on *Sambucus*, 26.vii.2011, RA; (H757427) under *Quercus* bark among lumber, 29.ix.2011, RA. **H38** Down: Hydebank Woods (J342677), Belfast, under bark of *Acer pseudoplatanus* log with *Quedius lyszkowskii*, 25.x.2007, RA; Murlough NNR (J411351), under bark of dead elm, 15.xi.2010, RA; Temple Water, Castleward (J572502), under ash bark, 19.iii.2011, RA; Shooter's Island (J580493), under bark of dead standing *Acer pseudoplatanus* (32 on a single tree), 23.ii.2012, RA.

STAPHYLINIDAE SUBFAMILY STAPHYLININAE

Atrecus affinis (Paykull, 1789) – Common and widespread

Under dead bark and in rotten wood of various trees, conifers and broad-leaved trees. Widespread and locally common throughout Ireland. *Baptolinus alternans* in Johnson and Halbert (1902). **H33, H36, H37, H38, H39, H40.**

Gabrius splendidulus (Gravenhorst, 1802) – Unclear, probably very localised/rare

Under dead bark, especially of *Fagus*. The Mount Stewart record has been verified and suggests a recent arrival in the north of Ireland. **H38** Down: Mount Stewart (J555701), 19.v.1992, APF.

Bisnius subuliformis (Gravenhorst, 1802) – Rare

A species associated with bird nests in trees. Added to the Irish list in 2012. **H37** Armagh: Loughgall Country Park (H902516), in bird nest material removed from plastic nest box, 27.xi.2012, RA.

Quedius brevicornis (Thomson, 1860) – Rare

Lives within nests of birds inside tree cavities; also found in tree rot holes and fungi. **H39** Antrim: Colin Glen (J270720), no data, 6.ix.2002, KNAA.

Quedius lyszkowskii Lott, 2010 – Scarce

A recently described species, previously overlooked within *Quedius aetolicus* Kraatz by modern workers and historically with *Q. puncticollis* in Irish collections (Lott, 2010). So far known only from Scotland and Ireland; may be endemic to the British Isles. Of the historical Irish records of '*Q. puncticollis*' only material from Killarney and Portmarnock have so far been

examined. Summer and autumn records are typically associated with decaying wood, but one winter record is from atypical habitat and may have been a dispersing individual. **H36** Tyrone: Baronscourt Park (H3682), under dead bark on veteran *Fagus*, 12.ix.2006, KNAA. **H38** Down: Hydebank Woods (J342677), under fungoid *Acer pseudoplatanus* bark, 25.x.2007, RA. **H39** Antrim: Barnett's Park (J320688), under *Acer pseudoplatanus* bark, 12.xii.1979, RA; Belfast Castle (J327793), under fungoid bark on *Fagus*, 11.vii.2004, RA; Bucklebrook House, Upper Ballinderry (J138668), in hen litter, 6.xi.2010, MDB. **H40** Londonderry: Roe Valley Country Park (C672208), under bark of stacked conifer logs, 16.vii.2011, RA.

***Nudobius lentus* (Gravenhorst, 1806) - Recent arrival**

Nudobius lentus is a central and northern species in Europe having spread south in recent decades. It has expanded its range in Britain since World War II from the highland pine woods of north-east Scotland to plantation pinewoods across most of the land area. There is no record of it occurring in Ireland (Good and Anderson, 2017). A single adult identified as this species was collected by AM under bark of dead *Pinus* sp. at the upper end of conifer plantings on Thomas Mountain (J36902991), Mourne Mountains Co. Down, on 28 August 2022 (Anderson and Mantell, 2023). It is likely more widespread than this.

FAMILY TROGIDAE

***Trox scaber* (L., 1767) – Rare**

H39 Antrim: Bucklebrook House (J138668), in poultry shed, 4.vi.2015, MDB.

FAMILY LUCANIDAE stag beetles

***Sinodendron cylindricum* (Linnaeus, 1758) rhinoceros beetle – Widespread (Plate 2)**

Bores in decaying heartwood of large broad-leaved trees, and also pine, including stumps. Irish hosts include alder, *Betula*, *Quercus* and *Castanea sativa* (Speight, 1985). Has been reported from floating timber in both freshwater and seawater. **H33** Fermanagh: Tempo, C. Langham (Langham, 1897; Johnson and Halbert 1902); Marble Arch (H1235), 24.vi.1988, DAL; Inishfendra, Corlatt Wood, Reilly Wood, etc, Crom Castle Estate (H360240), 1992, KNAA and APF, 4.xi.2002 and 6.vii.2007, KNAA; Castle Coole Estate (H2643), 2.vi.1992, KNAA; many dates, 2006, KNAA; Filbert Hill, Castle Coole (H258437), 26.vi.2010, RA; Rossyvullan Hill, Castle Coole (H264430), 28.v.2010, RA; Florencecourt (H183343), 21.vi.2010, RA; Finlane, Florencecourt (J171325), 20.vii.2012, RA; Inishcreagh (H283337), 22.x.2012, RA. **H36** Tyrone: Caledon Deer Park (H7543), many dates, 2006, KNAA; Brantry Lough (H750537), 26.i.2012, RA. **H37** Armagh: Tynan Abbey Estate (H761427), 21.vi.2011, 1.vii.2011, 26.vii.2011, RA. **H39** Antrim: Bucklebrook House (J138665), 12.vii.2005, MDB; Portmore Lough (J121688), 8.x.2009, RA; Shane's Castle (J185885), 1.vii.2010, RA; Portmore Graveyard (J187883), 9.x.2014, AM.

FAMILY CLAMBIDAE

***Clambus pallidulus* Reitter, 1911 – Rare**

Has been reported in Britain from a hollow apple tree, in debris in a rotten elm stump, and from moss among rotten logs, implying a saproxylic association. **H36** Tyrone: Drumcainne Forest (H880704), in grass heap by path, 17.viii.2017, MDB.

***Clambus punctulum* (Beck, 1817) – Rare**

H33 Fermanagh: Inishfendra (H373237), FIT, 16.vi.-15.vii.1993, APF.

FAMILY SCIRTIDAE

***Prionocyphon serricornis* (Müller, P.W.J., 1821) – Widespread**

Develops in water-logged hollows in old trees, especially *Fagus*, and including external hollows amongst roots; larvae aquatic, feed on detritus from dead leaves; adults active fliers, short-lived. “Appears to be common on *Fagus* trees just about everywhere here but has been completely overlooked (by me) until now. I have now looked in six locations and found it in five.” (RA, January 2008). These latter finds (also below) refer to larvae only, although adults are relatively easy to rear. **H33** Fermanagh: Finlane, Florencecourt (H173330), 6.iii.2011, BN, GNF, MDB, RA. **H36** Tyrone: Drum Manor (H757776), 19.i.2008, RA (Anderson, 2008a); Parkanaur (H74106168), 16.iii.2024. **H37** Armagh: Slieve Gullion Forest (J039195), 8.iii.2012, MDB/RA; Clare Glen (J018442), 17.v.2014, RA. **H38** Down: Minnowburn Beeches (J326686), 10.xii.2007, RA, (Anderson, 2008a); Killynether Wood (J472722), 2.ii.2008, RA; Temple of the Winds, Mount Stewart (J557693), 8.iii.2008, RA; Donard Demesne (J373302), 31.xii.2011, RA; Blackwood Walk (J469778), 15.v.2014, RA; Redburn Country Park (J400771), 30.i.2018, RA; Montalto Demesne (J366516), 10.xi.2018, RA. **H39** Antrim: Barnett’s Park (J323686), 16.xii.2007, RA (Anderson, 2008a); Lady Dixon Park, Belfast (J303678), 17.i.2008, RA; Deramore (J333699), 10.i.2017, RA. **H40** Londonderry: Springhill Estate (H866824), several colonies on mature *Fagus*, 17.xii.2007, RA (Anderson, 2008a).

FAMILY ELATERIDAE click beetles

***Denticollis linearis* (Linnaeus, 1758) – Widespread**

Larvae develop under bark on dead wood and in decaying heartwood; broad-leaved trees and pine; omnivorous, feeding on live larvae as well as dead phloem tissues, etc. Also develops on moorlands, where larvae are active in the upper peat and moss layers. ‘Very local’ in Ireland (Johnson and Halbert, 1902) although more widespread than then appreciated once the larvae are recognised. **H33, H36, H38, H39, H40.**

***Hemicrepidius hirtus* (Herbst, 1784) – Widespread**

The larvae of this species are reported from deadwood habitat. Adults are not uncommon by sweeping in woodland. **H37, H38, H39, H40.**

***Ampedus pomorum* (Herbst, 1784) – Uncommon**

Larvae develop in decayed timber of *Quercus*, *Betula*, pine and probably other trees; primarily associated with *Betula* around peatlands, but also in areas of ancient wood pasture. **H34/H40** East Donegal and Londonderry: Kilderry, CWB (Buckle, 1900; Johnson and Halbert, 1902). **H37** Armagh: Churchill (H8961), 1887, WFJ (Johnson, 1888a; Johnson and Halbert, 1902); Derryadd, Peatlands Park (H915604), 18.v.1992, 21.v.2007, 15.iv.2010, RA; Peatlands Park (H903610), 21.v.2007, RA; Argory Moss (H877575), 26.iv.2012, MDB; Brackagh Moss NNR (J021513), 2.ii.2016, MDB. **H39** Antrim: Garry Bog (C9430), two off sallow bush at edge raised bog, 7.vi.1992, KNAA; Great Deer Park, Glenarm (D2911), in dead *Quercus* branch, 20.v. and 13.vi.2006, KNAA. **H40** Londonderry: Iniscarn Forest, Moyola Park (H925945), 17.v.1985, RA; Kennedy's Quarry, Macosquin (H814277), 6.vi.1992, RA; Ballynahone More Bog (H865979), 28.v.2007, RA.

***Melanotus castanipes* (Paykull, 1800) – Widespread**

Larvae most frequently develop in red-rotted heartwood, but also in decaying wood generally. The adult flies after dark and is attracted to light. Included within *Melanotus villosus* (Fourcroy, 1785) in Britain and Ireland until separated by Mendel (2004) who comments he has *M. castanipes* from the west of Ireland while *M. villosus* predominates in SE England. **H33, H36, H37, H38, H38, H39, H40.**

FAMILY CANTHARIDAE soldier beetles

Larvae of Malthininae are thought to develop in decaying branchwood or heartwood, although the larvae of some *Malthodes* have been found as active predators over branch and trunk surfaces of living trees.

***Malthinus flaveolus* (Herbst, 1786) – Widespread**

Widespread in broad-leaved woodland and hedgerows. The lack of records from the southern counties is peculiar, but it does appear much more localised than it does in Britain. **H33** Fermanagh: Portora, Enniskillen (H2244), 19.v.1946, UM (collector unknown). Castle Coole Park (H2643), 17.vi.2006, KNAA. **H37** Armagh: Mullinure, Armagh (H8846), WFJ (Johnson, 1892a); Argory Moss (H881578), 1.vii.1992, KNAA; Peatlands Park (H896603), 16.vi.2020, MDB. **H38** Down: Greencastle Townland. (J21), 31.viii.1946, UM (coll. unknown); Belvoir Forest (J346694), 5.vii.1993, RA; Shimna River, Newcastle (J370315), 29.vii.1995, RA; Rostrevor *Quercus* wood NNR (J186173), two swept, 11.vii.2007, KNAA; Castleward Demesne (J5649), 20.viii.2006, KNAA. **H39** Antrim: Farr's Bay NR, Randalstown (J089870), 4.vii.1986, RCW (Welch, 1986); Newforge, Belfast (J330697), 15.vi.1994, RA; Breen Wood NNR (D128334), 13.vii.2005, RA; Shane's Castle Estate (J117884), 1.vii.2010, RA; Crewe Football Club (J177714), 15.vii.2021, RA. **H40** Londonderry: The Umbra NR, Magilligan (C725357), 5.vii.2005, RA. Ness Wood ASSI (C528118), 7.vii.2007, KNAA.

***Malthinus seriepunctatus* Kiesenwetter, 1852 – Uncommon**

Common in the south-east of Ireland (Johnson and Halbert, 1902), and widespread but local elsewhere; becomes more coastal in distribution in the north, as it does in Britain. **H33** Fermanagh: Correl Glen (H075545), 5.viii.1993, RA. **H36** Tyrone: Drumcairne Forest (H877907), 2.vii.2020, MDB. **H38** Down: Castlewellan Forest (J324374), 24.vi.2006, RA; Shimna River, Newcastle (J370315), Rostrevor *Quercus* wood NNR (J186170), swept in numbers, 11.vii.2007, KNAA; Dundrum Coastal Path (J416387), 30.vi.2009, RA; Mount Stewart (J563691), 11.viii.2010, RA. **H39** Antrim: Glenarm NR (D314118), 14.vi.2011, RA. **H40** Londonderry: The Umbra (C725357), 5.vii.2005, RA; Banagher Glen (C671046), 14.vii.2005, RA; Tamlaght Wood (C603300), 20.vi.2008, RA.

***Malthodes flavoguttatus* Kiesenwetter – Uncommon**

Most frequent in acidic *Quercus* and *Betula* woodlands of hill country districts. **H33** Fermanagh: Carrickreagh Bay, Lough Erne (H1751), 11.vi.1941, anon., UM. **H37** Armagh: Peatlands Park (H894612), 20.vi.2020, MDB. **H38** Down: Slieve Donard (J3529), 8.vii.1992, KNAA; Altataggart Mountain (J222237), 9.vii.2005, RA. **H39** Antrim: Carr's Glen (J3178), CWB det. JNH (Johnson and Halbert, 1902); Murlough Bay (D1941), 15.vi.1992, KNAA.

***Malthodes fuscus* (Waltl, 1838) – Uncommon**

Most frequent in acidic *Quercus* and *Betula* woodlands in hill country districts. '*Malthodes pellucidus*' in Johnson and Halbert (1902). **H33** Fermanagh: Florencecourt (H168345), 21.vi.2010, RA. **H37** Armagh: Peatlands Park (H896605), 20.vi.2020, MDB. **H38** Down: Rostrevor *Quercus* wood NNR (J186170), 11.vii.2007, KNAA. **H39** Antrim: Carr's Glen (J3178), CWB, det. JNH (Johnson and Halbert, 1902); Clare Forest, Ballycastle (D0641), 1.vii.1986, RCW; Breen Wood (D121337), 7.vi.1992 and 9.vii.2007, KNAA; Fair Head (D1843), 11.vi.1992, KNAA; Murlough Bay (D1941), 16.vi.1992, KNAA; Colin Glen (J2672), vii.1992, TD. **H40** Londonderry: Ness Wood ASSI (C528118), 7 and 8.vii.2007, KNAA.

***Malthodes guttifer* Kiesenwetter, 1852 – Uncommon**

First recorded in Ireland by Johnson and Halbert (1902) as *Malthodes mysticus* (see Halbert, 1937) then later by O'Mahony (1935a); now known to be relatively widespread. In damp woodland. **H33** Fermanagh: Brougher Mountain (H346523), 9.vi.2006, RA; Correl Glen NNR (H075545), RA; 5.vii.2007, KNAA; Rossyvullan Hill, Castle Coole (H265429), 28.v.2010, RA; Largalinnny ASSI (H073537), 5.vii.2007, KNAA. **H38** Down: Slieve Donard, lower slopes (J357277), 9.vii.1992, KNAA; Belvoir Park (J346694), 4.vii.1993, RA; Rostrevor *Quercus*wood NNR (J186173), 11.vii.2007, KNAA. **H39** Antrim: Shane's Castle (J130874), 3.vi.1995, RA; Farr's Bay NNR (J089870), 4.vii.1986, RCW (Welch, 1986); Breen Wood (D128334), 13.vii.2005, RA and 9.vii.2007, KNAA; Glenarm Great Deer Park (D2911), 29.vii.2006, KNAA; Glenarm NR (D315110), 14.vi.2011, RA. **H40** Londonderry: Banagher

Glen (C671046), 14.vii.2005, RA and 8.vii.2007, KNAA; Ness Wood ASSI (C528118), 8.vii.2007, KNAA; The Umbra (H724357), 1.vi.2011, RA.

***Malthodes marginatus* (Latreille, 1806) – Common and widespread (Plate 2)**

Larvae develop in decaying wood or beneath bark on dead timber; mainly predatory on insect larvae including dead ones, but will also feed on decaying timber to some extent. Common in Ireland (Johnson and Halbert, 1902). **H33, H36, H37, H38, H39, H40.**

[*Malthodes minimus* (Linnaeus, 1758) – Doubtful

H38 Down: near Belfast, Haliday (1885) (Johnson and Halbert, 1902).]

***Malthodes pumilus* (Brébisson, 1835) – Uncommon**

Usually found by sweeping tall grasses beneath mature and older trees, in open parkland as well as closed canopy high forest. *Malthodes atomus* (Johnson and Halbert, 1902). **H33** Fermanagh: Inishfendra, Crom, FIT (H373237), 1992, APF. Castle Coole Park (H2643), 17.vi.2006, KNAA. **H36** Tyrone: Baronscourt Park (H3682), 15.vi.2006, KNAA; Pomeroy Forest (H728724), 14.vi.2020, MDB. **H37** Armagh: Peatlands Park (H896605), 20.vi.2020, MDB. **H38** Down: (Johnson and Halbert, 1902); Ballymacormick Point (J5283), 21.v.2007, MGT. **H39** Antrim: (Johnson and Halbert, 1902); Great Deer Park, Glenarm (D3011), 13.vi.2006, KNAA. **H40** Londonderry: Foyle District (Buckle, 1900) (Johnson and Halbert, 1902); Drenagh Estate (C6923), 14.vi.2006, KNAA; Derrynoyd Forest (H764963); 5.vi.2020, MDB.

FAMILY ANOBIIDAE wood worm beetles

***Ptinus fur* (L., 1758) – Rare**

Associated with veteran trees feeding in fungi and rotting heart wood. **H38** Down: Belvoir Forest (J336695), found with *Ptinus subpilosus* under flaking bark of *Acer pseudoplatanus* on a veteran tree, 25.xi.1993, RA.

***Ptinus subpilosus* Sturm, 1837 – Rare old growth species**

Lives in old hollow trees and under loose flaking dead bark on tree trunks, mainly of *Quercus*, but also old pines in Scottish Highlands. Occasionally found as a scavenger in bird nests. Relict old forest species in Britain; in Ireland it may have a similar status surviving in a few historic demesnes e.g. Belvoir Park and Pollnacknockaun Forest, Southeast Galway (AM). **H39** Down: Belvoir Park Forest (J336695), a female from under flaking bark of an old sycamore, 25.xi.1992, RA; same locality, 2 males 2 females on 2.iii and 5.iii.2007, RA (Anderson, 1994); same locality, 10 in dry crevices with spider webs, 7.ii.2012, MDB/RA.

***Grynobius planus* (Fabricius, 1787) – Common and widespread**

Develops in dead heartwood of various broad-leaved trees. Locally common in old trees. **H33, H36, H37, H38, H39, H40.**

***Dryophilus pusillus* (Gyllenhal, 1808) – Established introduction**

In wood and debris of pine and larch; locally common on conifers and evidently extending its range in Ireland (Halbert, 1937). **H33, H37, H38, H39.**

***Ochina ptinoides* (Marshall, 1802) – Uncommon**

Develops in dead thick stems of ivy on trees in forests and in gardens. **H33** Fermanagh: Castle Coole Park (H2643), 17.vi.2006, KNAA; Crom Castle Estate (H360240), 6.vii.2007, KNAA; Culliagh Wood (H372274), 12.vii.2012, MDB. **H37** Armagh: Loughgall Forest (H9152), 1884-1892, WFJ; Peatlands Park (H896603), 16.vi.2020, MDB. **H38** Down: Cairnshill, Belfast (J355687), [town garden] 23.vii.1987, RA; Rostrevor Forest (J186172), 9.vii.2005, RA; 11.vii.2007, KNAA. **H39** Antrim: Farr's Bay NR (J089870), 4.vii.1986, RCW; Newforge, Belfast (J330697), 15.vi.2004, RA. **H40** Londonderry: Drenagh Estate (C6923), 14.vi.2006, KNAA.

***Xestobium rufovillosum* (De Geer, 1774) deathwatch beetle – Established introduction**

Bores in hard dead heartwood of several hardwood species where damp and fungal decay is present - in building timbers one fungus in particular *Donkioporia expansa* may be especially important; larval period anything between 1 and 13 years, usually 3-7; wings well-developed, but flight very rarely recorded, and unlikely to colonise buildings naturally. Flight occurs only when temperatures exceed 17°C and flying beetles are attracted to light. Very rare in Ireland (Hickin, 1952) and only known from building timbers. **H38** Down: Cregagh, Belfast (J3673), 31.iii.1994, in the wooden handle of a corkscrew originally from Germany, "the loud ticking was, as might be imagined, mysterious", Robert Nash, UM.

***Ernobius mollis* (Linnaeus, 1758) – Established introduction**

Develops in dead branches of softwoods, larvae consuming the bark but scoring sapwood, i.e. a cambium feeder. Indigenous to North Temperate regions, being common in northern Europe, especially in Scandinavia; widespread in Britain and Ireland; introduction in many parts of the World. **H38** Down: Altataggart Mountain, Mourne (J222237), on *Pinus sylvestris* in red bog, 9.vii.2005, RA. **H39** Antrim: Greenmount Agricultural College (J1584), in dying *Picea abies* by pond, 30.vi.1986, RCW (Welch, 1986). **H40** Londonderry: The Umbra (C724357), swept off *Pinus nigra*, 5.vii.2005, RA.

***Anobium inexpectatum* Lohse, 1954 – Rare, possibly overlooked**

Develops in dead ivy stems. Very similar to *Anobium punctatum* but the aedeagus and ovipositor styles differ and only recently distinguished. Several recent Irish records suggests that it is an overlooked native. **H39** Antrim: Belfast City Cemetery (J307730), 22.vii.2016, RA.

***Anobium punctatum* (De Geer, 1774) Furniture Beetle – Widespread**

Eggs laid in a crack or groove in exposed dead sapwood of living and dead trees. Larvae bore primarily within sapwood, and pupate just beneath outer surface. *Anobium domesticum* is 'common in old houses: Ulster, Connaught, Leinster, Munster' (Johnson and Halbert, 1902) –

few reports of wild-living beetles. Subfossil remains have been found in Viking Dublin (Reilly 2003). **H33** Fermanagh: Castle Coole Park (H2643), 2.vi.1992 and 26.vii.2006, KNAA. **H36** Tyrone: Baronscourt Park (H3682), 25.vii.2006; Caledon Deer Park (H7543), 26.vii. and 16.viii.2006, KNAA. **H37** Armagh: Tynan Abbey Estate (H755414), under fungoid bark on *Fagus*, RA; Derrymore House, Bessbrook (J0528), 6.vii.1992, KNAA; Derrymore House (J054281), 8.viii.2012, MDB. **H38** Down: Belfast Docks, corn stores (J3676), 1942-1946, AFO (O'Farrell and Butler, 1948); Copeland Bird Observatory Island (J597859), 1971-1973, CAMR; Terrace Hill, Ballynahatty (J322681), swept off winter barley, 7.viii.2006, RA; Hillsborough Forest (J247578), swept off *Pseudotsuga menziesii*, 3.viii.2006, RA; Castleward Park (J5649), 30.vii. and 20.viii.2006, KNAA. **H39** Antrim: Whitepark Bay ASSI (D2044), on walls of hostel, 27.vi.2007, MGT. **H40** Londonderry: Drenagh Estate (C6923), 28.vii.2006, KNAA.

***Ptilinus pectinicornis* (Linnaeus, 1758) – Uncommon**

Bores in exposed dry heartwood of old broad-leaved trees, making small pinholes; especially in *Fagus*, but also in most other species. **H33** Fermanagh: Tempo (H3528), C. Langham (Langham, 1897; Johnson and Halbert, 1902). Castle Coole Park (H2643), 17.vi and 27.vii.2006, KNAA. **H36** Tyrone: Baronscourt Park (H3682), on dead *Fagus*, various dates, 2006; Caledon Deer Park (H7543), vi. and vii.2006, KNAA; Drumcairne Forest (H867707), 2.vii.2020, MDB. **H37** Armagh: Tynan Abbey Estate (H761421), dead *Fagus*, 1.vii.2011, RA; Derrymore House Park, Bessbrook (J0528), 6.vii.1992, KNAA. **H38** Down: Belvoir Forest (J332692), on *Fagus* trunk, 19.vi.1984, RA; Portulla Wood, Quoile (J485464), on *Fagus* trunk, 20.vi.1984, RA; Mount Stewart Estate (J555701), 19.v.1992, APF; Mount Stewart (J559694), galleries in *Fagus*, 13.viii.2010, RA. **H39** Antrim: Deerpark Hotel, Antrim (J1485), on scarred *Quercus* (J1484), 30.vi.1986, RCW; Farr's Bay NNR (J089870), in partially dead *Fagus*, 4.vii.1986, RCW (Welch, 1986); Shane's Castle (J114885), at *Tilia* flowers, 1.vii.2010, RA. **H40** Londonderry: Drenagh Estate (C6923), on dead *Fagus*, 14.vi.2006, KNAA.

***Dorcatoma dresdensis* Herbst, 1792 – Rare old growth species**

In Ireland has only been found developing in the dead, persistent annual brackets of *Inonotus dryadeus* on veteran *Quercus* trees and *I. radiatus* on dead alder stems, but in Britain it favours dead hard perennial bracket fungi on broad-leaved trees, including *Ganoderma* and *Phellinus* spp. Although discovered very recently it is most likely an overlooked native. Alexander (2009) notes emergence holes in *I. dryadeus* almost certainly of this species at a number of historic parkland sites across Northern Ireland, but with confirmation from only Crom. **H33** Fermanagh: Inisherk, Crom Castle (H357248), occupied *I. dryadeus* bracket on old parkland *Quercus*, 6.vii.2007, confirmed by rearing, KNAA (Alexander, 2009), also 6.vii.2010, MDB.

FAMILY PHLOIOPHILIDAE

***Phloiophilus edwardsii* Stephens, 1830 – Rare old growth species**

Develops in the fungus *Peniophora quercina* which fruits on the aerial dead lower boughs of various mature open-grown broad-leaved trees and shrubs, but especially *Quercus*; generally in old wood pasture and parkland situations; adults active in autumn only. **H33** Fermanagh: Castle Coole Park (H2643), from dead branches on two mature parkland *Quercus* in Front Park, 14.ix. and 30.x.2006, KNAA (Alexander, 2010). **H36** Tyrone: Baronscourt Park (H3682), one in FIT hung on veteran parkland *Quercus*, 2006, KNAA (Alexander, 2010).

FAMILY CLERIDAE chequered beetles

***Korynetes caeruleus* (De Geer, 1775) – Casual introduction**

H39 Antrim: Dublin Road, Belfast (J337733), caught in furniture shop, 10.vi.2006, RN/RA (Nash and Anderson, 2007).

FAMILY MALACHIIDAE malachite beetles

***Malachius bipustulatus* (Linnaeus, 1758) – Doubtful**

Larvae partly predatory in galleries of wood-borers, partly feeding on their excreta and larval skins; adults sun-loving and feed on pollen, also seen to attack and eat the beetle *Dasytes aeratus* in Britain. Very local in Ireland (Johnson and Halbert, 1902) and mainly southern but appears to have reached Cos Cavan and Fermanagh in a northerly movement of recent years. The Rathlin record of Hardy is highly suspect. **H39** Antrim: Rathlin (D15), JRH (Hardy, 1897; Johnson and Halbert, 1902). **H33** Fermanagh: Old Crom Castle (H36012411), 6.vi.2021 (AH).

FAMILY ASPIDIPHORIDAE

All of the known Aspidiphoridae breed exclusively in slime fungus spore bodies.

***Aspidiphorus orbiculatus* (Gyllenhal, 1808) – Rare old growth species**

H37 Armagh: Brackagh Bog NNR (J018512), in moss on the bog surface, 20.i.2014, MDB; Loughgall Country Park (H907513), in moss on limestone lakeshore, 6.i.2015, MDB.

FAMILY NITIDULIDAE sap or blossom beetles

A number of species are attracted to sap flows, especially during fermentation; at freshly cut stumps, dying trees attracting the attention of bark beetles and the ambrosia beetle *Hylecoetus*, as well as exudations caused by the wood-boring larva of the goat moth *Cossus*. Dispersing adults may also feed casually on other moist decaying organic matter.

***Epuraea aestiva* (Linnaeus, 1758) – Common and widespread**

Adults at flowers of trees and shrubs, e.g. rowan and gorse; larval habits unknown but assumed to be sap beetles. Common in Ireland. **H33, H37, H38, H39, H40.**

***Epuraea angustula* Sturm, 1844 – Rare old growth species**

Associated with the borings of *Trypodendron* bark beetles in freshly dead trunks and boughs, especially of *Betula*, *Quercus* and *Fagus*. **H33** Fermanagh: Portora, Enniskillen (H2244), 3 specimens, 1.vi.1941, anon., UM. **H39** Antrim: Deramore (J332696), 1 male under bark on wind-thrown *Quercus* bough, 6.iii.1996, RA.

***Epuraea biguttata* agg. – Uncommon**

At sappy *Betula* and *Quercus* stumps, and bracket fungi; also may develop in compost where conditions suitable. There is some controversy about the distinction between *Epuraea biguttata* (Thunberg, 1784) and the closely similar *E. unicolor* (Olivier, 1790) formerly synonymised with it (as in Alexander and Anderson, 2012). Dissection of the male reproductive organs is required to confirm determinations. At present there is no evidence that the true *E. biguttata* is present in Ireland, so all older records are listed here under *E. biguttata* agg. (*E. biguttata/unicolor*). Those modern captures that have been confirmed by dissection are listed under *E. unicolor* (below). **H33** Fermanagh: Rossyvullan Hill, Castle Coole (H264430), in *Polyporus squamosus* on *Acer pseudoplatanus*, 20.vii.2010, RA; Inisherk Island (H357243), FIT, 1.vii.1992, APF. **H36** Tyrone: Baronscourt Park (H3682), beneath bark on sappy fallen branch, 12.ix.2006, KNAA; Parkanaur Forest (H739619), swept, 20.vi.2014, MDB. **H37** Armagh: Derrymore House (J053282), on *Polyporus squamosus* on *Acer pseudoplatanus*, 8.vii.2013, MDB; Annagarraiff NNR (H903606), in fungus on birch, 3.ix.2013, MDB. **H38** Down: Castlewellan (J3264), as *E. obsoleta* (Patterson, 1885) (Johnson and Halbert, 1902); Inch Abbey (J4745), swept off *Crataegus* blossom, hedge, 22.v.1995, RA; Killynether Wood (J475722), in *Polyporus squamosus* on fallen *Acer pseudoplatanus*, 29.vi.2012, MDB/RA; Castlewellan Forest (J327364), on agarics in mixed woods, 31.viii.2014, MDB. **H39** Antrim: Shane's Castle (J1188), as *E. obsoleta*, vi.1902, JNH (Halbert, 1910b); Langford Lodge (J088749), under sappy bark on windthrown *Quercus* bough, 28.v.2012, RA; Victoria College Belfast (J325714), under bark, conifer stump, 18.iv.2005, RA; Cranny Falls, Carnlough (D278185), on *Polyporus squamosus* on *Ulmus glabra*, streambank, 26.vi.2013, RA; Bucklebrook House (J137668), sugared red wine bait trap, 21.vii.2020, MDB. **H40** Londonderry: Ness Wood ASSSI (C528118), beneath sappy bark of fallen and sawn *Quercus* trunk, 8.vii.2007, KNAA.

***Epuraea distincta* (Grimmer, 1841) – Recent arrival**

Associated with fruit bodies of the bracket fungus *Daedaleopsis confragosa* which decays dead stems of *Salix* and *Betula*. First noted in 2007 and now widely known across north-east Ireland. **H36** Tyrone: Coalisland Canal, Cranebrook (H858649), 24.iv.2010, MDB; Cullentra Lough (H476476), 17.i.2014, MDB. **H37** Armagh: Derryadd Lough (H917603), 21.v.2007, RA (Anderson, 2007a), (H914604), 11.v.2012, RA; Brackagh Moss NNR (J021517), 14.iv.2010, MDB, (J019512), 20.i.2014, MDB; Brackagh Moss NNR (J020515), 8.vii.2020, MDB. **H38** Down: Rostrevor *Quercus* wood NNR (J186170), one in FIT, 11.vii.2007, KNAA. **H39** Antrim:

Portmore Lough. RSPB Reserve (J117684), 10.vii.2009, RA, Portmore Graveyard (J118685), 9.x.2014, RA; Rea's Wood NNR (J141852), 25.ii.2014, MDB.

***Epuraea longula* Erichson, 1845 – Scarce**

Adults have been found at goat moth *Cossus* burrows, but are more regularly found at woodland flowers; also reported from rotten elm; larval habitat not known. **H33** Fermanagh: Inisherk, Crom (H357243), in *Inonotus dryadeus* on *Quercus*, 31.iii.1997, RA. **H37** Armagh: Loughgall Country Park (H902515), in *Polyporus squamosus* on veteran *Fraxinus*, 26.viii.2008, RA. **H38** Down: Tollymore Forest (J343318), under piled up *Pseudotsuga menziesii* bark, 9.x.1993, RA. **H40** Londonderry: Foyle District, CWB (Buckle, 1900; Johnson and Halbert, 1902).

***Epuraea marseuli* Reitter, 1872 syn. *E. pusilla* (Illiger, 1798) – Uncommon**

Feed on the eggs and larvae of scolytid bark beetles under sappy bark, although also considered by some authors to be fungivores or scavengers; colonise freshly dead wood once colonised by scolytids - attracted by scolytid pheromones; conifers and broadleaves. Adults also found at blossom and in tree fungi. Under fir bark (Johnson and Halbert, 1902). **H36** Tyrone: Caledon Deer Park (H7543), off *Quercus* foliage, 17.v.2006, KNAA; Baronscourt Park (H3682), under bark on sappy fallen branch 12.ix.2006, KNAA. **H37** Armagh: Peatlands Park (H898603), 29.v.2000, RA (Anderson, Simms and Nelson, 2000). **H38** Down: Tollymore Forest (J343318), *Pseudotsuga menziesii* bark, 9.x.1993, RA. **H39** Antrim: Shane's Castle Demesne (J1188), under bark of fallen firs, vi.1923, OEJ (Janson, 1924). **H40** Londonderry: Foyle District, CWB (Buckle, 1900; Johnson and Halbert, 1902).

***Epuraea melanocephala* (Marshall, 1802) – Common and widespread**

Larval habits unknown; adults found at flowers of trees and shrubs, and amongst foliage; overwinter in leaf litter. Added to the Irish list by Irwin (1975) – but see O'Mahony (1934). Probably widespread but overlooked. **H33, H37, H38, H39.**

***Epuraea melina* Erichson, 1843 – Rare**

Adults usually found at flowers; larval habitat unknown. A curious miscellany of reports, mostly old. There is some doubt about the records determined by T. Delaney who was not an expert in the group. One modern record by MDB in west Fermanagh, det. RA. **H33** Fermanagh: Portora, 17.v.1946, anon., det. T. Delaney, UM; Farnamullan (H298394), 19.v.1946, anon., det. T. Delaney, UM; Castle Caldwell (H030628), moss on shoreline, 22.iv.2015, MDB. **H38** Down: Conlig, near Bangor, JJW (Walker, 1895; Johnson and Halbert, 1902); Greencastle, Carlingford Lough, 8.vi.1945, anon., det. T. Delaney.

***Epuraea pallescens* (Stephens, 1835) syn. *E. florea* Erichson, 1845 – Scarce**

At flowers and tree-sap; also in fungi. 'Probably common, but there are few records' (Johnson and Halbert, 1902). **H36** Tyrone: Baronscourt Park (H3682), knocked from aerial dead

branches on *Tilia*, 2.vii.2006, KNAA. **H37** Armagh: Mullinure (H8846), Armagh, WFJ (Johnson, 1892a); Derrymore House (J054280), on bark of freshly split *Quercus*, 8.vii.2013, MDB. **H39** Antrim: Ballycastle (D1140), ix.1901, GWC (Chaster and Tomlin, 1902); Langford lodge (J088749), sappy bark of windthrown *Quercus* bough, 28.v.2012, RA.

***Epuraea rufomarginata* (Stephens, 1830) – Rare**

Amongst borings of the beetle *Trypodendron domesticus* in a cut bough; also under dead spruce bark and in *Quercus* faggots; and in *Daldinia* fungus on ash. **H38** Down: Stormont (J396743), under bark of *Acer platanoides* faggots, 7.v.1994, RA. **H39** Antrim: Moss Plantation, Shane's Castle (J092893), under bark of freshly thrown *Quercus* branch, 16.vii.2010, RA.

***Epuraea silacea* (Herbst, 1783) syn. *E. deleta* Sturm, 1844 – Uncommon**

At flowers, under sappy bark on dead wood, and in bracket fungi. Very rare in mid-Europe. Bullock (1930) is credited with the first Irish record in Anderson *et al.* (1997). Locally common in fungi (Johnson and Halbert, 1902). **H33** Fermanagh; Largalinn ASSI, Correl Glen (H053357), 17.vii.2007, KNAA. **H37** Armagh: Armagh City (H8745), WFJ, *Epuraea deleta* (Johnson and Halbert, 1902); Tynan Abbey Estate (H755414), 26.vii.2011, RA. **H38** Down: Comber (J46), CWB *E. deleta* (Johnson and Halbert, 1902); Murlough Dunes (J415350), 20.v.1992, KNAA, (J415352), 11.vi.2020, MDB; Drumlea, Quoile (J474457), on haw flowers, 22.v.1995, RA. **H40** Londonderry: Drenagh Estate (C6923), 14.vi.2006; Banagher Glen (C672045), under bark, 20.v.2007, KNAA.

***Epuraea terminalis* (Mannerheim, 1843) syn. *E. adumbrata* Mannerheim, 1852 – Rare old growth species**

Under bark of sappy dead *Quercus*, *Betula* and pine timber. **H39** Antrim: Moss Plantation, Shane's Castle (J092893), 2 males on splintered, fresh-thrown *Quercus* branch, 16.vii.2010, RA.

***Epuraea thoracica* Tournier, 1872 – Established introduction**

Under bark on deadwood and on resinous stumps and planks of conifers; generally with scolytids; mainly Scottish in Britain, but appears to have spread with conifer forestry. **H40** Londonderry: Foyle District, *Epuraea oblonga*, CWB (Buckle, 1900; Johnson and Halbert, 1902).

***Epuraea unicolor* (Olivier, 1790) – Probably widespread**

H38 Down: Dundrum Castle (J404371), in *Polyporus squamosus* on *Aesculus*, 23.vi.2014, MDB; Murlough House (J413352), on *Polyporus squamosus* on *Acer pseudoplatanus*, 11.vi.2020, MDB. **H39** Antrim: Bucklebrook House (J137668), in sugared red wine trap, 9.viii.2020, MDB.

***Soronina grisea* (Linnaeus, 1758) – Uncommon**

Develop in sap-flows from injured broadleaved trees of many species; widespread in the

Quercus-wood areas of Scotland although Speight (1989) suggests primarily associated with ash in Ireland. **H33** Fermanagh: Inisherk, Crom, FIT (H3524), 4.ix-5.x.1992, APF. **H38** Down: near Belfast, AHH (Haliday, 1885); Ballintogher, Downpatrick, 1 swept in grain field, 17.viii.2006, RA. **H39** Antrim: Cranmore, Belfast (J3270), R. Templeton (Johnson and Halbert, 1902); Ballycastle, BT (Johnson and Halbert, 1902, Supplementary List); Lough Neagh (near Gawley's gate?), 1 only, 3-4.ix.1935, EO (Crawford and O'Mahony, 1935; Speight, 1989); Rea's Wood (J140850), 1 on ash trunk during flood, 10.xii.1999, RA; Great Deer Park, Glenarm (D2911), three from soggy bracket of *Fistulina* on old *Quercus*, 16.ix.2006, KNAA.

***Soronia punctatissima* (Illiger, 1794) – Rare**

Associated with *Fraxinus* in Ireland (Speight, 1989) but more with *Quercus* elsewhere. 'An Irish-taken specimen in Dublin Museum, which had been for many years in the Trinity College collection' (Johnson and Halbert, 1902). **H33** Fermanagh: Inisherk, Crom (H357243), in FIT 1.vi.-7.vii.1992, APF. **H39** Antrim: Bucklebrook House (J137668), in sugared red wine trap, 9.viii.2020, MDB.

***Glischrochilus quadriguttatus* (Fabricius, 1777) – Rare**

Known recently from Muckcross, Killarney (Speight, 1988) and Bellurgan near Dundalk (RA/MDB) but only from Rea's Wood within Northern Ireland. **H39** Antrim: Rea's Wood (J139850), one in sugared wine baited trap, 9.vii.2021, MDB.

***Glischrochilus quadripunctatus* (Linnaeus, 1758) – Casual introduction?**

On conifers. Just a single old record for NI, maybe a chance introduction. **H36** Tyrone: Dungannon (H7962), with *Ips quadripustulata*, Haliday ms (Johnson and Halbert, 1902).

***Glischrochilus hortensis* (Geoffroy in Fourcroy, 1785) – Uncommon**

Like others of this group, often associated with sap flows. Recorded widely in southern counties by MC (Cork, Laois, Kildare, Waterford, Wexford,) in recent decades but only a single record for the north. **H37** Armagh: Loughgall Country Park (H902515), 26.viii.2008, RA.

***Pityophagus ferrugineus* (Linnaeus, 1758) – Established introduction**

Usually under bark of conifers. **H36** Tyrone: Ballyard, Trillick (H339587), on silver fir, 3.vi.1998, SC. **H38** Down: Rostrevor Forest(J1918), mixed spruce and pines, vi.2023, FS.

FAMILY MONOTOMIDAE

Larvae feed on larvae of other small beetles, including certain scolytid bark beetles; in damp conditions where there is mould or sap, especially beneath bark on freshly dead wood.

***Rhizophagus cribratus* Gyllenhal, 1827 – Scarce**

H36 Tyrone: Caledon Forest (H7553), WFJ (Johnson, 1896). **H37** Armagh: Armagh City (H8745), WFJ (Johnson, 1891); Palace Grounds, in moss, WFJ (Johnson, 1892a); Loughgilly (J0135), WFJ (Johnson and Halbert, 1902).

***Rhizophagus depressus* (Fabricius, 1793) – Established introduction**

Under bark of dead pine. **H33** Fermanagh: Ballyard, Trillick (H339587), 3.vi.1998, SC. **H37** Armagh: Acton Glebe, Poyntzpass (J0540), WFJ (Johnson, 1900; Johnson and Halbert, 1902); Peatlands Park (H898603), under *Pinus sylvestris* bark, abundant, 29.v.2000, RA. **H39** Antrim: Shane's Castle (J1188), Lough Neagh, under bark of fallen firs, June 1923, OEJ (Janson, 1924); Portgenone Forest (H976031), 10.vi.2004, SC. **H40** Londonderry: Foyle district, CWB (Buckle, 1900; Johnson and Halbert, 1902).

***Rhizophagus dispar* (Paykull, 1800) – Common and widespread**

Under bark of most dead broad-leaved trees, and in bracket fungi, also on plantation conifers. Common, often abundant in Ireland. **H33**, **H36**, **H37**, **H38**, **H39**, **H40**.

***Rhizophagus ferrugineus* (Paykull, 1800) – Uncommon**

Under bark on dead pines, also occasionally *Quercus*; not uncommon. **H33**: Fermanagh: Inisherk (H357248), Crom Castle, vii.2007, KNAA. **H36** Tyrone: Davagh Bridge, Davagh Forest (H694862), 2.vi.1998, SC. **H38** Down: Hillsborough Forest (J247579), 28.viii.1993, RA; Audley's Castle (J577507), 20.ii.2008, RA; Leitrim Lodge (J223256), 29.ii.2012, RA; Tollymore Forest (J335324), 10.viii.2012, MDB. **H39** Antrim: Breen Wood NNR (D128334), 13.vii.2005, RA, 9.vii.2007, KNAA.

***Rhizophagus parallelocolis* Gyllenhal, 1827 – Established introduction**

Only known from synanthropic sites in Ireland but native in Britain. **H37** Armagh Cathedral Grammar School (H8745), one in room, WFJ (Johnson, 1892a). **H39** Antrim: Armoy Churchyard (D0632), in numbers on tombstones, ix.1901, GWC (Chaster and Tomlin, 1902).

***Rhizophagus perforatus* Erichson, 1845 – Rare**

Under bark on dead broad-leaved trees. Only modern record from Rostrevor. **H37** Armagh: Palace Demesne (H8744), in moss, WFJ (Johnson, 1892a). **H38** Down: Rostrevor Oakwood (J185174), under bark on *Quercus* logs, 13.v.2000, RA. **H39** Antrim: Ballycastle (D1140), BT (Johnson and Halbert, 1902, Supplementary List).

FAMILY CRYPTOPHAGIDAE silken fungus beetles
CRYPTOPHAGIDAE SUBFAMILY CRYPTOPHAGINAE

***Henoticus serratus* (Gyllenhal, 1808) – Rare**

Added to the Irish list in 1923, but not reported since despite searches at Donard Park. Adults often attracted to spring flowers. **H33** Fermanagh: Jones Memorial Primary School, Drumgallan (H22234226), singleton swept from silage field, 24.v.2022 (Anderson and Hart, 2023). **H38** Down: Donard Demesne, Newcastle (H373301), two under bark of felled *Fagus*, vi.1923, OEJ (Janson, 1924).

***Cryptophagus dentatus* (Herbst, 1793) – Common and widespread**

Occupies a great variety of niches in woodland, including saproxylic fungi. Common. **H33, H36, H37, H38, H39, H40.**

***Cryptophagus intermedius* Bruce, 1934 – Rare**

Known from borings of the bark beetle *Hylesinus varius* under *Fraxinus* bark and at *Acer pseudoplatanus* sap. The only Irish record relates to a non-saproxylic context. **H38** Down: Deramore (J331696), 2 in abandoned grass bale, 26.iv.1995 (Anderson, Simms and Nelson, 2000).

***Cryptophagus denticulatus* Heer, 1841 – Rare**

Known in Ireland from gathered hay and under fungoid bark on trees; ecology poorly understood and only recognised as distinct from *Cryptophagus dentatus* in the 1950s. **H38** Down: Morelands Meadow, Belvoir (J337697), 1 under bark on slender part of a fallen *Fagus* branch in parkland, 18.xi.1992, RA. **H39** Antrim: Shane's Castle (J114881), 1 under fungoid bark of a large *Quercus* log, 1.vii.2010, RA.

***Cryptophagus pubescens* Sturm, 1845 – Rare**

Known in Ireland from old records for Powerscourt Co. Wicklow and Shane's Castle Co. Antrim. There is a somewhat doubtful modern record for a pitfall set in conifer-planted upland bog at the head of Glenariff, Co. Antrim (1992, AC det RA). A single specimen was collected in a pool trap at Bucklebrook, Upper Ballinderry (J13686681), 29-31.viii.2023 (MDB, det RA).

***Cryptophagus ruficornis* Stephens, 1830 – Recent arrival**

Often said to be associated with the fungus *Daldinia concentrica* fruiting on deadwood of ash but also on *Polyporus squamosus* in Northern Ireland. Added to the Irish list in 1992 from sites in Northern Ireland. While conceivably an overlooked native, it is more likely a recent colonist from Scotland, especially in view of the host, *Daldinia concentrica*, being rare and coastal in Northern Ireland, with no records of this beetle from the south of Ireland. **H37** Armagh: Loughgall Country Park (H903513), frequent in *Polyporus squamosus* on veteran *Fraxinus*, 26.viii.2008, RA. **H38** Down: Belvoir Forest (J336693), in rotted *Fistulina* on veteran *Quercus*, 12.x.2003, RA; Hillsborough Forest (J247579), in pitfall under *Pseudotsuga menziesii*, 29.vi.2005, RA; Mount Stewart, Sea Plantation (J552695), in fungoid bark on *Fagus*, 13.ix.2003, RA. **H39** Antrim: Ballyskeagh (J280671), one under loose dry bark of a splintered, burnt *Fraxinus* stump, 8.xii.1992, RA; Mountsandel Wood, Coleraine (C854305), in old chaffinch nest in tree hole, 9.ii.2008, RA. **H40** Londonderry: Drenagh Estate (C6923), plentiful on old *Acer pseudoplatanus* with *Daldinia*, 14.vi.2006, KNAA.

***Cryptophagus scanicus* (L., 1758) – Widespread and common**

Common under bark, occasionally in fungi on trees. **H33, H36, H37, H38, H39, H40.**

***Micrambe bimaculata* (Panzer, 1798) – Scarce**

This species is associated with *Pinus* deadwood in northern Britain but in Ireland is uniquely

associated with fine sand beaches on Lough Neagh where it appears to forage in washed up litter and carcasses. An enigmatic species. **H39** Antrim: Shane's Castle (J1387), bed of rushes, vi.1902, CWB (Johnson and Halbert, 1902); (J132871), beaten from sedge litter at top of sandy beach, 22.iii.1978, RA; (J122878), strandline litter, sandy shore, 16.v.2004, RA; Ram's Island (J103732), strandline litter, 4.vi.2005, RA; 3.v.2007, strandline litter, RA. **H40** Londonderry: Moyola Waterfoot (H970902), in grass litter with *Myrmica* ants at top of beach, 9.v.1998, RA; strandline litter, 22.v.2004, RA; Traad Point (H957870), strandline litter, 5.v.2007, RA; Ballinderry, Waterfoot (H954812), 9, under calf carcass, 10.iv.2012, RA; Moyola Riverbank (H964894), 2, under buzzard carcass, 27.iv.2012, RA/MDB.

CRYPTOPHAGIDAE SUBFAMILY ATOMARIINAE

Adults and larvae of most species probably feed on fungal hyphae and moulds. With the present state of knowledge, individual species are particularly difficult to allocate to the decaying wood category with confidence when individuals have been found in leaf litter or flood refuse (both including decaying twigs), as well as more distinct decaying wood habitats. *Atomaria vespertina* Erichson, 1846 syn. *A. pulchra* Erichson, 1846 – Established introduction?

Associated with decaying conifer wood. **H36** Tyrone: Glenmore ASSI (H654609), 19.i.2017, MDB. **H38** Down: Rostrevor Forest (J189184), one male in *Ips typographus* pheromone trap in *Picea sitchensis* stand, 27.vii.2006, SC (Anderson and Clawson, 2006); Shooter's Island, Quoile Estuary (J494470) 23.ii.2012, MDB.

Atomaria umbrina (Gyllenhal, 1827) – Rare

Associated with *Armillaria mellea* and *Pholiota* spp, on decaying wood in woodlands. Adults also taken in grass heaps. **H37** Armagh: Armagh (H84), WFJ det. C. Johnson; Mullinure (H9946), Loughry's Lough (H9144), WFJ (Johnson, 1892a). **H38** Down: Derryleckagh Fen (J119523), in pitfall, v-vi. 2007, BN det. RA.

FAMILY EROTYLIDAE

Dacne bipustulata (Thunberg, 1781) – Uncommon

Associated with *Laetiporus sulphureus*, *Piptoporus betulinus* and *Pleurotus ostreatus* on broadleaf trees. Widespread in northern counties, but surprisingly, just one report from the south. First recorded as Irish by Stelfox (1952). **H33** Fermanagh: Castle Coole Park (H2643), from *Bjerkandera adusta* on *Fagus*, 18.v. and 27.vii.2006, KNAA; Crom Castle Park (H3624), at very fresh *Laetiporus sulphureus* on standing dead *Quercus*, 18.v.2007, KNAA; Rossyvullan Hill, Castle Coole (H264430), in *Polyporus squamosus* on *Acer pseudoplatanus*, 20.vii.2010, RA. **H36** Tyrone: Caledon Deer Park (H7543), one at *Bjerkandera adusta* on old *Acer pseudoplatanus*, 16.vi.2006, and teneral on *P. squamosus*, 16.viii.2006, KNAA. **H37** Armagh:

Loughgall Country Park (H903513), abundant in *Polyporus squamosus* on veteran *Fraxinus*, including several entirely pale (rufous) specimens, 26.viii.2008, RA; Tynan Abbey Estate, in *Polyporus squamosus* on *Sambucus nigra*, 26.vii.2011, RA; Loughgall Country park (H912515), on rotting brown fungus (some pale specimens), 26.ix.2012, MDB. **H38** Down: Hillsborough Forest (H251583), *Bjerkandera adusta* on *Fagus* logs, 24.iii.2003, RA; Lady Dixon Park (J302679), in mature slime mould under *Alnus* bark, 14.v.2020, RA. **H39** Antrim: Lagan Meadows, Belfast (J334700), several from decaying *Bjerkandera adusta* on an *Acer pseudoplatanus* stump, 9.iii.1993, RA (Anderson, 1995); Newforge Lane, Belfast (J326692), in *Gymnopilus* on *Pinus sylvestris*, 9.vii.2008, RA; Shane's Castle (J112884), in *Bjerkandera adusta* on *Fagus* log, 1.vii.2010, RA. **H40** Londonderry: Springhill House (H8683), mixed woodland, 25.vi.1992, KNAA.

FAMILY CERYLONIDAE

Feed on fungal hyphae and spores.

***Cerylon fagi* Brisout de Barneville, 1867 – Rare old growth species**

Generally under bark, especially of *Quercus*, but also on *Fagus* and *Fraxinus*. Very localised in Europe. **H33** Fermanagh: Dell near Marble Arch caves (D121344), under bark on fallen *Fagus*, 10.vi.2017, RA.

***Cerylon ferrugineum* Stephens, 1830 – Uncommon old growth species**

Fairly widespread in Co. Fermanagh, mainly under bark of *Quercus* and *Fraxinus*, much rarer elsewhere. **H33** Fermanagh: Knocknabragh (H368240), 26.v.1992; Corlatt Wood (H355234), 27.v.1992; Reilly Wood (H339242), 28.v.1992; Killy Upper (H374245), 7.vii.1992, all Crom Castle Estate, KNAA; Castle Archdale carpark (H175586), 11.v.1997, RA; Castle Coole Park (H2643), 2.vi.1992, 18.v. and 17.viii.2006, KNAA; Florencecourt (H183343), under bark on *Quercus*, 21.vi.2010, RA; Rossvullan Hill, Castle Coole (H264430), fungoid *Quercus* bark, 26.vi.2010, RA; Wattle Bridge (H427201), under bark on hedgerow *Fraxinus*, 11.viii.2011; Colebrooke Park (H406446), 25.x.2012, RA; Inisherk Island (H361247), 12.vii.2012, MDB. **H36** Tyrone: Baronscourt Park (H355826), beneath bark on fallen *Quercus* branches, 16.v.2006, RA and KNAA; 25.vii and 12.ix.2006, KNAA. **H37** Armagh: Peatlands Park (H896612), under bark on dead *Betula*, 23.x.1993, RA; Tynan Abbey Estate (H761428), under fungoid bark on *Quercus*, 21.vi.2011, RA. **H39** Antrim: Rea's Wood NNR (J140851), 11.x.2013, MDB.

***Cerylon histeroides* (Fabricius, 1793) – Uncommon old growth species**

Under bark on dead broad-leaved timber. Generally distributed. **H33** Fermanagh: Castle Coole Park (H2643), 17.vi.2006, KNAA; Knockninny ASSI (H272303), 1.vi.2007, RA; Rossvullan Hill, Castle Coole (H264430), 20.vii.2010, RA. **H36** Tyrone: Caledon Park (H7543), 17.v.2006, KNAA; Brookend ASSI (H945727), 8.v.2007, RA. **H37** Armagh:

Peatlands Park (H896612), 23.x.1993, RA; Annagarrieff NNR (H904614), in *Formica aquilonia* nest, 3.iv.2007, RA; The Argory (H867580), 29.iii.2011, RA; Tynan Abbey Estate (H761427), 21.vi.2011, RA; Derrymore House (J056280), 8.viii.2012, MDB. **H38** Down: Minnowburn Beeches (J326685), 29.i.1994; Rostrevor Oakwood NNR (J185174), 13.v.2000, RA. **H39** Antrim: Belvoir Park (J3469), RS (Johnson and Halbert, 1902); Deramore (J332696), 11.xi.1992, RA; Rea's Wood (J143853), 20.iv.1995, RA; Farr's Bay NNR (H089870), 4.vii.1986, RA; Moss Plantation, Shane's Castle (J093893), 16.vii.2010, RA; Lady Dixon Park (J302679), 14.v.2020, RA. **H40** Londonderry: Scab Island, Lough Beg (H973952), 6.xii.1975, RA.

FAMILY ENDOMYCHIDAE false ladybirds

***Endomychus coccineus* (Linnaeus, 1758) – Recent arrival (Plate 1)**

Lives gregariously with its larvae on or around fungoid bark especially on *Salix* and *Fagus*, but also on *Malus*, *Aesculus* and *Betula*. Most often seen in wet woodland but can occur in gardens. First noted in Ireland in 1976 and has since spread throughout north-eastern counties. **H33** Fermanagh: Rossyvullan Hill, Castle Coole (H266429), 24.viii.2010, RA. **H36** Tyrone: Brantry Lough (H748534), under bark of dead standing *Fagus*, 26.i.2012, MDB/RA. **H37** Armagh: Derrycarne Road, Portadown (J008576), seen on several occasions between 1990 and 2012 in rural garden/orchard, most recently 12.v.2012, BN; Tynan Abbey Estate (H755414), 26.vii.2011, RA; Loughgall Country park (H911517), 26.ix.2012, MDB; Derrymore House (J052282), 8.ix.2015, RA. **H38** Down: Morelands Meadow, Belvoir (J337697), 1.xi.1992, RA; Belvoir Forest (J345695), 1.ix.1997, RA; Killynether Wood (J473720), 2.ii.2008, RA; Newtownbreda Village (J350696), urban garden, Belfast, 30.iii.2008; Shooter's Island (J494470), under bark of dead standing sycamore, 23.ii.2012, MDB/RA; Edenderry (J324685), 10.iv.2013, RA; Murlough House Woods (J414352), 5.i.2013, RG; Stormont Estate (J396745), 21.iii.2018, RA. **H39** Antrim: Rea's Wood (J138849), 1st record - seven clinging to dry bark under a pile of fresh wind-felled *Salix* boughs in native alder woodland, on juvenile fruiting bodies of *Trametes*, 2.x.1976, RA (Anderson, 1977); Rea's Wood (J1582), 3.xii.1994, RA; Clement Wilson Park, Lagan Valley (J325695), 8.i.1992, RA (Anderson, 1992); Lady Dixon Park (J303676), 28.ii.2005, RA; Belfast Castle (J326793), 12.ii.2007, RA; Toome Weir, Lough Neagh (H988902), 3.v.2007; Quarterland, Dundrod (J220749), rural garden, 5.xi.2011, RA; Belfast City Cemetery (J309703), 22.vi.2016, RA. **H40** Londonderry: Springhill House (H867829), 26.iv.2003, RA; The Umbra (C724357), 2.i.2004, RA.

***Mycetaea subterranea* (Fabricius, 1801) – Rare**

H36 Tyrone: Parkanaur Forest (H738714), old hay, deer paddock, 29.vii.2015, MDB. **H38** Down: Tyrella Beach (J469363), grass heap on beach, 18.vii.2017, MDB. **H39** Antrim: Belfast docks (J3676), 1942-1946, AFO (O'Farrell and Butler, 1948).

FAMILY LATRIDIIDAE brown scavenger or plaster beetles

Most species in this group are mould feeders, under bark etc.

***Enicmus testaceus* (Stephens, 1830) – Rare**

The sites for this species in Northern Ireland do not, in the main, fit a saproxylic species! Requires further study. **H33** Fermanagh: Molly Mountain (H233282), one from *Inonotus radiatus* brackets on *Acer pseudoplatanus* in open pastureland, 23.vi.1995, RA (Anderson, 1998). **H36** Tyrone: Blessingbourne Wood (H487446), lakeshore debris, 12.iii.2014, MDB. **H38** Down: Hollymount NNR (J459432), in grass clippings, 31.v.2011, MDB; Turmennan Fen (J485505), by a small spring, 12.ix.2018, RA; Slieve Martin (J203169), roots of upland grass, 28.iii.2019, MDB.

***Lithostygnus serripennis* Broun, 1914 – Recent arrival**

This species is native to New Zealand and is a mould feeder. It can be found in stored food products, in mouldy wood, and occurs in leaf litter under *Quercus*. **H38** Down: East Twin, Belfast Docks (J3676), 1942-1946 (O'Farrell and Butler, 1948). **H37** Tynan Abbey (H760425), in rotting *Armillaria* under a dead *Quercus*, 29.ix.2011, RA.

FAMILY MYCETOPHAGIDAE Hairy Fungus Beetles

The species in this group are associated with decaying bark and wood.

***Litargus connexus* (Geoffroy in Fourcroy, 1785) – Rare**

Only recently discovered in Northern Ireland (Anderson, 1993). A likely host on *Betula* is the pyrenomycete *Daldinia loculata*, which can be common on fire-damaged *Betula* on the margins of raised bog. Possibly native as it has been found in west Fermanagh. **H33** Fermanagh: Castle Caldwell Forest (H030607), bred from white rot on *Quercus*, lakeshore, 3.viii.2020, MDB. **H37** Armagh: Derryadd Lough (H915604), 3 under loose bark in fire-damaged *Betula* stumps extensively affected by red rot, on cutover peat, 18.v.1992, RA (Anderson, 1993); Derryadd (H911606), 1 in *Piptoporus* on *Betula*, 11.v.2012, MDB/RA. **H39** Antrim: Montiaghs Moss ASSI (092649), in red-rot *Betula*, 12.viii.2020, AH det. RA.

***Mycetophagus multipunctatus* Fabricius, 1793 – Scarce**

Found in association with bracket fungi on *Salix*, *Quercus* and *Alnus* in riparian habitats at its Northern Ireland localities. Originally thought to be a recent arrival but recent discovery of colonies in west Fermanagh suggest it is a rare and overlooked native. **H33** Fermanagh: Castle Caldwell Forest (H030607), bred from white rot on *Quercus*, lakeshore, 3.viii.2020, MDB. **H37** Armagh: Derrytrask School Lands (H885643), in old *Piptoporus* on *Betula*, 21.ix.2020, RA. **H38** Antrim: Rea's Wood (J143583), 8 adults and 4 larvae in *Polyporus* on *Salix fragilis*, 12.iv.2007, RA (Anderson, 2007b); Portmore Lough, RSPB Reserve (J122688), 3 in *Daedaleopsis confragosa* on *Salix caprea*, willow carr, 8.x.2009, RA/MDB; Shane's Castle (J115885), 1 dead under fungoid bark on *Quercus*, 1.vii.2010, RA; Portmore Estate (J121688),

in *Daedaleopsis confragosa* on *Salix*, 23.x.2014.

***Typhaea stercorea* (L., 1758) – Uncommon**

A mould feeder which can turn up in and under bark on trees. **H33** Fermanagh: Marble Arch NNR (H1235), 24.vi.1988, MM/DAL. **H37** Armagh: Mullinure (H8846), swept, 1884-1892, WFJ.; Acton Glebe (J0540), hay stack, 1900, WHP. **H38** Down: Tollymore Forest (J343318), in piled-up *Pseudotsuga menziesii* bark in forest, 9.x.1993, RA; Hillsborough Forest (J247579), farm dunghill, 17.viii.1993, RA. **H39** Antrim: Farr's Bay NR (089871), beaten off *Cirsium* flower, 28.vii.1995, RA; Half Umry, Lough Neagh (J132869), beach litter, 27.viii.2019, RA. **H40** Londonderry: Black Glen, Downhill (C760363), in old hay bale, 26.iii.2012, MDB.

FAMILY CIIDAE minute tree fungus beetles

Adults and larvae often found gregariously in small and large bracket fungi on trees. Under-recorded but several species are common.

***Octotemnus glabriculus* (Gyllenhal, 1827) – Common and widespread**

Chiefly found in *Trametes versicolor*, *Pseudotrametes gibbosa*, *Stereum hirsutum*, *Bjerkandera adusta* and *Polyporus squamosus* in descending order of frequency, and often on *Fagus* in Northern Ireland. **H33, H36, H37, H38, H39, H40.**

***Orthocis alni* (Gyllenhal, 1813) – Scarce**

Reputedly associated with jelly ear fungus *Auricularia auricula-judae*, mainly on dead stems of elder, but also regularly knocked from aerial dead branches on open-grown *Quercus* trees; larvae develop in the soft fungoid sapwood of the colonised dead host tissues. The record for Phoenix Park (Halbert, 1893) is to be deleted (Johnson and Halbert, 1902). For many years only known from a few old records, but recently shown to be more widespread on veteran open-grown parkland trees in historic demesnes. **H33** Fermanagh: Castle Coole Park (H260430), aerial dead branches on *Quercus*, 2.vi.1992 and 17.vi.2006, KNAA; Crom Castle (H362240), beaten from *Ganoderma* on *Quercus*, 21.viii.2004, RA. **H36** Tyrone: Baronscourt Park (H3682), beaten from aerial dead branches on parkland *Quercus*, 12.ix.2006, KNAA. **H37** Armagh: Loughgall Country Park (H903513), in *Polyporus squamosus* on *Acer pseudoplatanus*, 26.viii.2008, RA; Tynan Abbey Estate (H761424), in *Inonotus dryadeus* on *Quercus*, 1.vii.2011, RA. **H39** Antrim: Ballycastle (D1140), Tomlin coll., NMW, Cardiff; Barnett's Park, Belfast (J317686), in *Inonotus radiatus* on alder with larvae, 11.i.2011, RA; *Polyporus squamosus* on *Sambucus nigra*, 26.vii.2011, RA.

***Cis bidentatus* (Olivier, 1790) – Common and widespread**

Recorded from *Bjerkandera adusta*, *Ganoderma australe*, *Ganoderma resinaceum*, *Inonotus dryadeus*, *Inonotus radiatus*, *Laetiporus sulphureus*, *Piptoporus betulinus*, *Polyporus squamosus*, *Ridigidiporus ulmarius*, *Stereum hirsutum*, *Trametes versicolor* in Northern Ireland. Probably commonest on small brackets such as *Trametes* and *Stereum*. **H33, H36, H37, H38,**

H39, H40.

***Cis bilamellatus* Wood, 1884 – Established introduction**

First recorded in Ireland in 2003, in Northern Ireland in 2004. **H36** Tyrone: Brookend NNR (H951724), *Daedaleopsis confragosa* on *Salix*, 21.viii.2018, RA. **H37** Armagh: Derrytrask School Lands (H885643), *Piptoporus* on *Betula*, 21.ix.2020, RA. **H38** Down: Belvoir Forest (J342694), *Bjerkandera adusta* on *Quercus* stump, 15.iv, 23.iv.2004, RA; Rostrevor Oakwood (J186173), from *Stereum gausapatum* on fallen *Quercus* bough 23.v.2007, KNAA; Helen's Tower, Clandeboye (J488774), *Trametes versicolor* on *Fagus*, 10.ii.2011, RA; Portaferry House (J596531), *Trametes versicolor* on *Fagus*, 30.xi.2011, RA; Leitrim Lodge (J223256), under bark on dead *Pinus contortus*, 29.ii.2012, RA; Ballymenoch Park (J408794), *Polyporus squamosus* on *Fagus*, 19.vi.2018, RA; Lackan Bog (J238377), *Piptoporus* on *Betula*, 26.vi.2019, RA. **H39** Antrim: Portmore Lough, RSPB Reserve (J122618), *Daedaleopsis* on *Salix*, 8.x.2009, RA; Barnett's Park (J317686), *Inonotus radiatus* on *Alnus glutinosa*, 11.i.2011, RA; Lady Dixon Park (J375606), in soft rot *Acer pseudoplatanus* heartwood, 26.xi.2015, RA.

***Cis boleti* (Scopoli, 1763) – Common and widespread**

Common on small brackets such as *Trametes versicolor*, *Stereum hirsutum*, *Trametes suaveolens*, *Pseudotrametes gibbosa*, *Bjerkandera adusta*, *Piptoporus betulinus*, *Daedaleopsis confragosa*. Mostly on *Trametes*. **H33, H36, H37, H38, H39, H40.**

***Cis festivus* (Panzer, 1793) – Uncommon**

Usually recorded from *Stereum* brackets, often on *Quercus* in this part of Ireland. **H33** Fermanagh: Inisherk, Crom (J355242), 27.vi.2000, RA; Castle Coole Park (H2643), aerial dead branch on *Quercus*, 17.vi.2006, KNAA. **H36** Tyrone: Baronscourt Park (H3682), 15.vi.2006, KNAA. **H37** Armagh: Peatlands Park (H895607), 12.viii.2000, RA. **H38** Down: Rostrevor Oakwood NNR (J185174), 13.v.2000, RA; Morelands Meadow (J337697), 15.iv.2004, RA; Castle Ward Park (J5649), 20.viii.2006 and 28.x.2006, KNAA; Shooter's Island (J494470), 23.ii.2012, RA. **H39** Antrim: Newforge Plots (J332695), 11.xi.1992, RA; Great Deer Park, Glenarm (D2911), 22.v. and 24.x.2007, KNAA; Glenarm Nature Reserve (J301099), 1.xi.2011, RA. **H40** Londonderry: Banagher Glen (C670045), 25.v.2007, KNAA.

***Cis nitidus* (Fabricius, 1792) – Widespread**

Develops in the brackets of *Ganoderma australe* in particular; the larvae have particularly heavily developed mandibles for chewing this exceptionally woody fungus; can also develop in *Piptoporus betulinus*. Most often found in old parklands or wood pastures. **H33** Fermanagh: Castle Coole Park (H2643), on *Ganoderma australe*, 2.vi.1992, 18.v. and 27.vii.2006; Crom Castle Park (H32), 7.vii.1992, KNAA. **H36** Tyrone: Baronscourt Park (H3682), on *Ganoderma australe*, 25.vii.2006; Caledon Park (H7543), 17.v.2006, KNAA. **H37** Armagh: Slieve Gullion Forest (J037194), 8.iii.2012, RA. **H38** Down: near Belfast, AHH (Haliday, 1885; Johnson and

Halbert, 1902); Castleward Park (J5649), 9.vii.1992 and 14.vi.2006, KNAA; Mount Stewart (J5570), 27.vi.1992, KNAA; 11.viii.2010, RA; Stormont Estate (J399751), 20.v.1994, RA; Belvoir Forest, 16.xii.1993, 15.iv.2004, RA; Murlough NNR (J403355), 15.xi.2010, RA; Portaferry Estate (J596531), 30.xi.2011, RA. **H39** Antrim: Barnett's Park, 16.xi.1993, RA; Collin Glen (J270720), 6.ix.2002, KNAA; Great Deer Park, Glenarm (D2911), iii.2006, KNAA; Moss Plantation, Shane's Castle, 16.vii.2010, RA; Langford Lodge (J088749), 28.v.2012, RA. **H40** Londonderry: Springhill Estate (H8683), 25.vi.1992, KNAA; Drenagh Estate (C6923), *G australe*, 14.vi.2006, KNAA; Roe Valley Country Park, 16.vii.2011, RA.

***Cis vestitus* Mellié, 1849 – Scarce**

Mainly on aerial dead branches on open-grown *Quercus* trees, generally with the fungus *Peniophora quercina*. **H33** Fermanagh: Castle Coole Park (H2643), aerial dead branches on parkland *Quercus*, v-x.2006, KNAA; Crom Castle Park (H3624), aerial dead branches on parkland *Quercus*, 6.vii.2007, KNAA. **H36** Tyrone: Baronscourt Park (H3682), v-x.2006, Caledon Deer Park (H7543), vi. vii. and ix. 2006, KNAA. **H38** Down: Castle Ward Park (J5649), aerial dead branches on parkland *Quercus* and *Tilia*, v-ix.2006; also from *Laetiporus sulphureus*, 17.ix.2006, KNAA. **H39** Antrim: Great Deer Park, Glenarm (D2911), vi-xii.2006 and 22.v.2007, KNAA; Langford Lodge (J088749), in crevices in splintered *Quercus* bough, 28.v.2012, RA. **H40** Londonderry: Drenagh Estate (C6923), *Quercus* and common lime, 16.vii, 26.vii, 13.xi.2006, KNAA; Banagher Glen (C670045), aerial dead branch with *Stereum rugosum* on *Corylus*, 8.vii.2007, KNAA.

FAMILY TETRATOMIDAE

Associated with bracket fungi.

***Tetratoma ancora* Fabricius, 1791 – Rare old growth species**

Larvae under encrusting fungal fruiting bodies on dead and decaying standing stems of hazel and other broadleaved trees, generally in deep shade; ancient woodlands. First reported in Ireland in 1939, but recently demonstrated to be more widespread than previously appreciated. A reliable marker of old growth (Crowson, 1987). **H36** Tyrone: Parkanaur Forest (H733612), 1, under bark of dead *Quercus*, 1.vi.2020, MDB. **H38** Down: Rostrevor (J2019), one under bark of a dead Scots pine, viii.1939, CTG (Gimingham, 1942); Rostrevor Oakwood NNR (J186173), two knocked from aerial dead hazel poles, 11.vii.2007, KNAA. **H40** Londonderry: Ness Wood ASSI (C5211), one in flight trap, 7.vii.2007, KNAA. Banagher Glen (C670045), two knocked from aerial dead hazel poles, 8.vii.2007, KNAA.

***Tetratoma fungorum* Fabricius, 1790 – Recent arrival**

This species develops successfully, and most commonly, in fruiting bodies of *Piptoporus betulinus* on *Betula*; and has been found in Britain developing in *Pleurotus cornucopiae*, *P. ostreatus*, *Flammulina velutipes*, *Fistulina hepatica* and *Paxillus panuoides*; adults have also

been taken on *Inonotus cuticularis*, *Bjerkandera adusta* and *Polyporus squamosus*. The first Irish record was in 1992, but it has been found a number of times since, suggesting an expanding population. **H36** Tyrone: Brantry Lough (H748534), in fallen *Piptoporus* under *Betula*, 26.i.2012, MDB/RA; Washing Bay, Lough Neagh (H902658), under bark of standing *Alnus glutinosa*, 31.1.2013, RA. **H37** Armagh: Peatlands Park (H914605), 2 + several larvae in *Piptoporus betulinus* on dead *Betula*, 15.iv.2010, RA; Ballymoyer Wood (H974311), larvae in *Piptoporus* on *Betula*, 2.ii.2012, MDB/RA; Loughgall Forest (H911516), *Piptoporus* on *Betula*, 8.i.2014, MDB. **H38** Down: Carrowdore Castle (J584732), teneral in *Hericium cirrhatum* on *Fagus* stump, 23.x.2002; Belvoir Forest (J342694), three in decaying *Bjerkandera adusta* on *Quercus* stump, 23.iv.2004, RA (Anderson, 2006); Murlough NNR (J411351), 2 under bark in dead elm, 15.xi.2010, RA; Shooter's Island (J494471), in *Flammulina velutipes* on sycamore, 23.ii.2012, MDB/RA; Delamont House (J510507), *Armillaria* on *Fagus*, 20.x.2012, MDB; Castleward House (J579496), *Armillaria* on *Acer pseudoplatanus*, 17.x.2014, MDB. **H39** Antrim: Murlough Bay (D189425), off *Betula* polypore in *Betula* woodland, 16.vi.1992, KNAA (Alexander and Foster, 1995); Belfast Castle (J326794), adults and larvae in *Flammulina velutipes* on wych elm, 13.iii.2005, RA (Anderson, 2006); Belfast Castle (J326796), 8 larvae in *Pleurotus cornucopiae* on dead wych elm, 9.iii.2008, RA; Bucklebrook House (J138668). *Polyporus squamosus* on *Fraxinus*, 28.x.2009, MDB. **H40** Londonderry: Banagher Glen (C672047), bracket on *Quercus*, 26.ix.2010, MDB.

FAMILY MELANDRYIDAE false darkling beetles

***Orchesia micans* (Panzer, 1793) – Scarce old growth species**

Develops in a variety of large polypore fungi: in lowland Britain especially *Inonotus hispidus* fruiting from standing live mature and older ash trees, but in the west primarily in *I. radiatus* on standing dead alder and *Betula* stems; has also been reported from *Fistulina hepatica* on live *Quercus*; mainly but possibly not exclusively in ancient woodland and wood pasture. All Irish records come from *I. radiatus* brackets. **H33** Fermanagh: Correl Glen NNR (H074546), adult knocked from old *I. radiatus* on alder snag by Sillees River, 5.vii.2007, KNAA; Florencecourt (H178344), several reared from *I. radiatus* on alder, 16.iii.2011, MDB det. RA; Finlane, upper Florencecourt (H171325), 2 in *I. radiatus* on alder, hedgerow, 20.vii.2012, RA. **H36** Tyrone: Round Lough (H444483), frequent in *I. radiatus* on alder, 22.vii.2011, RA; Cullentra Lough (H474475), in *I. radiatus* on alder, MDB. **H39** Antrim: Great Deer Park, Glenarm (D2911), adult and larvae with old *I. radiatus* brackets on alder, 20.v.2006; Glenarm Woods ASSI (D3010), reared from larvae collected 22.v.2007, parasitic wasps hatched as well, KNAA.

***Orchesia minor* Walker, 1836 – Rare old growth species**

Develops in the fruiting bodies of a variety of wood-decay polypore fungi and possibly certain Ascomycetes, mainly on aerial dead branches; especially in permanently damp

woodlands, in carr or gorge situations. Most often found in ancient woodland and wood pasture. Long only known in Ireland from Co. Kerry, but recently shown to be more widespread. **H33** Fermanagh: Correl Glen NNR (H074537), one knocked from dead boughs of up-ended hazel stool, 17.v.2007, KNAA. **H38** Down: Rostrevor Oakwood NNR (J186173), two knocked from aerial dead hazel poles and another swept from *Luzula*, 11.vii.2007, KNAA. **H39** Antrim: Great Deer Park, Glenarm (D2911), 1 knocked from dead branch in lower canopy of old open-grown *Quercus*, 27.x.2006, and 1 from FIT on edge of hazel thicket; Glenarm Woods, ASSI (D3011), 2 knocked from aerial dead hazel poles, 10.vii.2007, KNAA.

***Orchesia undulata* Kraatz, 1853 – Widespread**

Develops in decaying aerial dead branches of *Quercus* trees; also reported from other broad-leaved trees to some extent. Adults are relatively mobile and occasionally turn up in association with the dead wood of a wider variety of tree species outside of the period June/July, and these may have been attracted to fruiting wood-decay fungi for feeding (particularly in May) or be merely sheltering between periods of activity, especially while over-wintering. Adults are occasionally found at hawthorn and umbel blossom. Rare and threatened in central Europe. **H33** Fermanagh: Inisherk, Crom (H353244), one in FIT within ancient woodland, 7.vii. – 4.ix.1992, APF (Alexander, 1997b); Culliagh Wood (H370244), Crom, in *Stereum hirsutum* on *Quercus*, 21.viii.2004, RA; Castle Coole Park (H2643), 17.viii. and 14.ix.2006, KNAA; Rossyvullan Hill, Castle Coole (H266429), under bark on *Fagus* log, 24.viii.2010, RA; Castle Coole (H257429), fungus on *Quercus*, 22.xi.2011, MDB; Colebrooke Park (H409450), under dead aerial branch, *Quercus*, 25.x.2012, RA. **H36** Tyrone: Baronscourt Park (H3682), 2 dead beneath bark on fallen bough beneath open-grown parkland *Quercus*, 16.v.2006; one swept under ancient *Quercus*, 15.vi.2006, KNAA. Caledon Deer Park (H7543), vi., vii. and viii.2006, KNAA; Drumcairne Forest (H876707), under bark of *Quercus* logs, 2.vii.2020, RA; Parkanaur Forest (H733612), 1.vi.2020, MDB. **H37** Armagh: Tynan Abbey Estate (H761421), 2 under tight *Fagus* bark, 1 under *Castanea* bark, 1.vii.2011, RA; Brackagh Bog (J020515), in bracket on dead *Salix*; (J022509), by sweeping, both 8.vii.2020, MDB. **H38** Down: Belvoir Forest, Belfast (J336696) under bark of fallen bough of veteran *Quercus*, 7.ii.2012, MDB/RA; Leitrim Lodge (J223256), 1 under bark of dead upright *Pinus contorta*, 29.ii.2012, MDB. **H39** Antrim: Shane's Castle (J115885), under bark of splintered *Quercus*, 1.vii.2010, RA; Glenarm NR (D301101), under bark on fallen *Quercus*, i.xi.2011, MDB. **H40** Londonderry: Drenagh Estate (C6923), aerial dead lime branch with *Peniophora* sp., 5.ix.2006, KNAA.

***Abdera flexuosa* (Paykull, 1799) – Uncommon old growth species**

Mainly develops in the small brackets of the wood-decay fungus *Inonotus radiatus* which decays dead standing stems of *Alnus*, *Salix* and *Betula*. Also found on *I. dryadeus* fruiting on *Quercus* in Co. Fermanagh and *Phellinus pini* in Aberdeenshire. The Co. Leitrim records from pine may suggest development in the dead persistent annual brackets of *Phaeolus schweinitzii*

which have the same soft fibrous consistency as *Inonotus* spp. Most records are from ancient woodlands and wood pastures. Currently only known in Ireland from Cos Fermanagh (where widespread), Tyrone and Leitrim. **H33** Fermanagh: Inisherker, Crom (H357243), four on bracket fungus of *Inonotus dryadeus* on parkland *Quercus*, 1.vi.1992, APF (Alexander and Foster, 1995); Crom Park (H32), knocked from *I. radiatus* on dead alder stem in open by Lough Nalughoge, 18.v.2007, KNAA; Molly Mountain (H233282), two from *I. radiatus* brackets on *Acer pseudoplatanus* in open pastureland, 23.vi.1995, RA (Anderson, 1998); Castle Coole Park, knocked from *I. radiatus* brackets on alders, 18.v.2006, KNAA; Correl Glen NNR (H074537), knocked from *I. radiatus* brackets on alders, 17.v.2007; one swept, 5.vii.2007, KNAA. **H36** Tyrone: Caledon Deer Park (H7543), numerous on old *I. radiatus* brackets on alder, 16.vi.2006, KNAA; Cullentra Lough (H474475), in *I. radiatus* on alder, 22.vii.2011, MDB det. RA; Brantry Lough (H746534), reared from *I. radiatus* brackets on alder, collected 26.i.2012, MDB/RA; Wood Lough (H762603), 1, climbing upright decorticate *Alnus* pole, 24.v.2012, RA. **H39** Antrim: Deramore, Belfast (J333697), reared from *I. radiatus* brackets on alder, collected 7.ii.2012, RA/MDB.

FAMILY RIPHIPHORIDAE

***Metoeus paradoxus* (L., 1761) – Rare**

A parasite of wasps *Vespula* which deposits its eggs in rotted deadwood which the wasps excavate to get pulp for nest building and thus transport the parasite to the nest. **H38** Down: Lady Dixon Park (J303676), beaten from *Alnus viridis* in a wet meadow, 18.viii.2007, RA.

FAMILY COLYDIIDAE cylindrical bark beetles or ironclad beetles

Mostly predatory.

***Pycnomerus angulatus* (Broun, 1893) – Established introduction (Plate 3)**

An import from New Zealand, not recorded elsewhere in the Northern Hemisphere. Under bark and in soft heartwood of dead, mainly coniferous, wood (Alexander and Anderson, 2012). **H38** Down: Mount Stewart House (J554695), 1 under bark of *Pinus radiata* logs in carpark, 26.x.2002, RA; Sea Plantation, Mount Stewart (J552695), 17 in white-rot debarked logs of *Picea abies* in *Euophryum* galleries, 26.vii.2003, RA det. PMH; (J551695), 1 under *Picea* log, 15.vii.2006; (J551695), 3 under *Acer pseudoplatanus* log, 12.x.2011, RA.

***Pycnomerus fuliginosus* Erichson, 1842 – Established introduction**

An import from Australia. Under bark of broadleaved trees. First noted in Ireland in south Down in 1981. **H37** Armagh: Derrymore House (J058277), under bark on dead *Fagus*, 6.vii.1992, KNAA; Ballymoyer Wood (National Trust) (H970311), in powdery frass from *Euophryum confinis* on upright dead *Picea abies*, 2.ii.2012, MDB/RA; Slieve Gullion Forest (J040196), under bark of *Fraxinus* log, 8.iii.2012, MDB/RA; Derrymore House (J052282),

under bark, dead *Acer pseudoplatanus*, 8.ix.2015, RA. **H38** Down: Maghera south of Mourne Park (J268152), two under bark of a partly decayed alder on a gravelly river bank (J268151), 9.v.1981, RA (O'Connor *et al.*, 1983); Rostrevor Oakwood NNR (J186173), on *Quercus* logs, 13.v.2000, RA (Anderson, Simms and Nelson, 2000); on *Quercus*, 28.vi.1992, 23.v.2007, KNAA; Derryleckagh Wood ASSI (J121253), in powdery rotten *Quercus* wood with *Euophryum confine*, 17.ii.2012, MDB/RA; Tullyframe, Mourne Park (J265168), in soft white-rot ash, 27.iii.2012, MDB/RA.

***Synchita humeralis* (Fabricius, 1792) – Doubtful**

Feeds on fungus-colonised sappy bark or timber, of *Betula*, *Crataegus*, *Alnus*, *Corylus* and especially *Fagus*; has been reared from *Daldinia* in long-established *Betula* woods. Not included as Irish in Anderson *et al.* (1997). **H38** Down: near Belfast, AHH (Haliday, 1885), '*Monotoma juglandis*' in this reference; the specimens cannot be traced (Johnson and Halbert, 1902).

FAMILY TENEBRIONIDAE darkling beetles

***Alphitobius diaperinus* (Panzer, 1796) – Casual introduction**

Usually brought in mealworm cultures to feed captive reptiles etc., but may semi-naturalise in woodland. **H39** Antrim: TACT Wildlife Centre, Crumlin (J154766), 2 in animal forage and litter, 26.vii.2013, RA.

***Tenebrio molitor* Linnaeus, 1758 mealworm beetle – Established introduction**

In stored-products and a domestic pest; also develops in bird nests and in bat roosts where larvae are scavengers; occasionally found in decaying timber. In flour stores and houses (Johnson and Halbert, 1902). **H39** Antrim: Belfast, in timber yard (J37), CWB (Johnson and Halbert, 1902); Belfast docks (J3676), 1942-1946, AFO/PMB (O'Farrell and Butler, 1948).

***Palorus ratzeburgi* (Wissmann, 1848) – Established introduction**

Associated with wood borers (Scolytidae and Bostrychidae) in its natural habitat, but predominantly found in stored cereal products and other commodities in Ireland, particularly in mouldy grain residues previously attacked by grain weevils; occasionally on imports, more frequently in flour and provender mills, grain stores, maltings, etc; widely distributed in Europe. Has been found in decaying wood and bracket fungi in Britain in recent years, perhaps responding to climate change. **H39** Antrim: Belfast docks (J3676), 1942-1946, AFO (O'Farrell and Butler, 1948).

***Nalassus laevioctostriatus* (Goeze, 1777) – Common across Ireland but scarce in Northern Ireland**

Develops in decaying timber in ancient woodlands and wood pastures; also in peaty soils of heaths. Larvae feed indiscriminately on organic material. Adults nocturnal, feeding on algae encrusting timber or lichens on heaths. Mostly short-winged, but with occasional reports of

flying individuals. As *Helops striatus* “common on heather on high ground, and under fir bark”, Almost confined in our area to the coast around Dundrum Bay/Murlough NNR in Co. Down where it is common. **H38**.

***Gonodera luperus* (Herbst, 1783) – Rare (Plate 3)**

Records for Northern Ireland are restricted to sand dunes of the Magilligan area of Co. Londonderry where relict woods comprising *Juniperus/Taxus/Prunus spinosa* scrub survived until the 19th century. Currently both *Taxus* and *Juniperus* have become extinct in the area. **H40** Londonderry: Magilligan Sands (C63), “one *Cistela luperus* found in a sand-pocket during a strong wind”, CWB (Buckle, 1900; Johnson and Halbert, 1902); Ballymaclary Dunes, Magilligan (C694367), one swept off marram grass in grey dunes, 18.vi.2017, AM.

FAMILY OEDEMERIDAE false blister beetles

***Nacerdes melanura* (Linnaeus, 1758) wharf borer – Established introduction**

A species associated with waterlogged timber in coastal sites or in pilings and wharves on estuarine river banks. Mainly in softwood. **H38** Down: Benderg Bay, Killard NNR (J606431), under a stone, sheltered sandy bay, 12.vi.1978, RA; Belfast Harbour Estate, D3 lagoon (J376784), under sodden planks by saltwater lagoon, 21.viii.1998, RA; Murlough NNR (J452317), under driftwood, sandy shore, 5.vii.2013, RG. **H39** Antrim: Sand Quay, Belfast (J3475), CWB (Johnson and Halbert, 1902, Supplementary List).

FAMILY SALPINGIDAE narrow-waisted bark beetles

The species in this family are principally associated with subcortical habitats on living trees but several species are also associated with finer twigs and branches and/or where fire-damage has occurred.

***Rabocerus gabrieli* Gerhardt, 1901 – Rare**

In dead wood. **H39** Antrim: Rea’s Wood, Antrim (J1385), ix.1936, OE (O’Mahony, 1938). Has been looked for at this site in recent years but without success.

***Sphaeriestes ater* (Paykull, 1798) – Rare, Unclear**

In burnt twigs. Status of early records unclear due to confusion in identification of the genus (Anderson, 2009b) – ‘may prove to be widespread in eastern Ireland’. **H38** Down: Dundrum Bay (J3935), vi.1923, OEJ (Janson, 1924).

***Sphaeriestes castaneus* (Panzer, 1796) – Established introduction**

On conifers, in dead and dying branches. No modern reports. **H37** Armagh: Little Castledillon (H9048), WFJ (mistakenly det. as *Sphaeriestes aeratus*) (Johnson and Halbert, 1902); Dean’s Hill, Armagh (H8846), unknown date, WFJ; Poyntzpass (J0539), date unknown, WFJ (Johnson and Halbert, 1902). **H40** Londonderry: Foyle district, CWB (Buckle, 1900; Johnson and Halbert, 1902).

***Sphaeriestes reyi* (Abeille, 1874) – Rare**

In burnt twigs. Referred to as *Salpingus aeratus* in Johnson and Halbert (1902). Status of early records are unclear due to confused identification in this group (Anderson, 2009b). **H38** Down: Bloody Bridge, Mourne Mountains (J380272), one swept off burnt *Ulex gallii*, 14.v.2007, RA (Anderson, 2009b); Slieve Donard, Mourne (J35662746), 1 under stones, summit heath, 6.vi.2022, AM. **H39** Antrim: Cave Hill (J3179), CWB det. GCC (Johnson and Halbert, 1902).

***Vincenzellus ruficollis* (Panzer, 1794) – Uncommon**

Under bark of broad-leaved trees, especially hawthorn and *Fagus*. **H33** Fermanagh: Inisherk Island, Crom (H3524), FIT 4.ix-5.x.1992, APF. **H37** Armagh: Derrymore House (J056280), 6.vii.1992, KNAA. **H38** Down: Newtownards (J489732), 1 swept from saltmarsh grassland, 24.vi.1998, RA; Castleward Park (J5649), 21.v.2006, KNAA. **H39** Antrim: Newforge, Lagan Canal (J328692), under bark of *Nothofagus*, 20.x.1992, RA; Deramore (J332695), in *Stereum hirsutum* on *Fagus* log, 11.xi.1992, RA; Lagan Meadows (J334700), under fungoid bark of *Fagus* logs, 27.xi.1992, RA; Lady Dixon Park (J303676), 11 under bark with *Stereum* on *Fagus* logs, 11.i.2005, RA. **H40** Londonderry: Foyle district, CWB (Buckle, 1900; Johnson and Halbert, 1902).

***Salpingus planirostris* (Fabricius, 1787) – Common and widespread**

Under bark on various broad-leaved trees in early stages of decay; normally saprophagous, but will also feed on insect larvae. Widespread and common, at least in northern counties of Ireland. **H33, H36, H38, H39, H40**.

***Salpingus ruficollis* (Linnaeus, 1761) – Widespread**

As the previous, seemingly more common in northern counties. **H33** Fermanagh: Belleisle (H2935) (Porter, 1898; Johnson and Halbert, 1902); Inisherk, Crom (H357243), FIT 4.ix-5.x.1992, APF. Castle Coole Park (H2643), FIT, 25.x.2006, KNAA. **H36** Tyrone: Baronscourt Park (H3682), FITs, various dates, 2006, KNAA. **H37** Armagh: Palace Grounds, Dean's Hill (H8744), WFJ (Johnson, 1888b, 1892a; Johnson and Halbert, 1902). **H38** Down: Tollymore Park (J3531) (Patterson, 1885); Lough Neagh, Haliday ms. (Johnson and Halbert, 1902); Newforge, HLO det. WFJ (Johnson, 1914); Kircassock (J139567), under *Acer pseudoplatanus* bark flakes, 27.xi.1976; Derrymore House (J0528), 6.vii.1992, KNAA; Tollymore Forest (J347323), in a small *Piptoporus* on *Betula*, 9.x.1993, RA; Ballyskeagh (J280671), under bark of *Tilia*, 8.xii.1992, RA; Giant's Ring, Edenderry (J325674), under *Acer pseudoplatanus* flakes, 24.x.1992, RA; Castle Ward Park (J5649), 28.x.2006, KNAA; Dundrum Castle (J404370), under fungoid bark on *Aesculus*, 20.xvii.2009, RA; Shooter's Island (J494470), 23.ii.2012, RA. **H39** Antrim: Ballycastle, BT (Johnson and Halbert, 1902); Newforge Lagan Canal (J328692), under bark of *Nothofagus*, 20.x.1992; Belfast Castle (J327793), under fungoid *Fagus* bark, 11.vii.2004, RA; Lady Dixon Park (J303676), under fungoid *Fagus* bark with *Stereum*,

11.i.2005, RA; Great Deer Park, Glenarm (D2911), 16.ix.2006, KNAA; Breen Wood (D121337), FIT, 9.vii.2007, KNAA. **H40** Londonderry: Drenagh Estate (C6923), 19.v. and 15.ix.2006, KNAA.

FAMILY SCRAPTIIDAE tumbling flower beetles

Adults of this group are often found at flowers such as *Crataegus*. Larvae tend to live in deadwood.

***Anaspis fasciata* (Forster, 1771) syn. *A. humeralis* (Fabricius, 1775) – Rare**

Only a single record. **H33** Fermanagh: Lough Yoan, Castle Coole (H2542), 2.vi.1992, KNAA.

***Anaspis frontalis* (Linnaeus, 1758) – Uncommon**

Adults are occasionally in numbers at *Crataegus* blossom. Widespread but uncommon in Northern Ireland. **H37** Armagh: Dean's Hill, Armagh (H8846), WFJ (Johnson, 1892a); Peatlands Park (H896612), at *Crataegus* lowers, 29.v.2000, RA (Anderson, Simms and Nelson, 2000); Derryinver, Lough Neagh (H972641), sweeping *Filipendula*, 14.viii.1996, RA; Derrymagowan, Argory (H874573), *Crataegus* flowers, 4.v.1996, RA; Loughgall Forest (H909517), on *Quercus* foliage, 14.v.2005, RA. **H39** Antrim: Rea's Wood (J1584), beating *Cotoneaster*, 30.vi.1986, RCW (Welch, 1986); Shane's Castle (J114885), at *Tilia* flowers, 1.vii.2010, RA. **H40** Londonderry: Banagher Glen (C670045), on flowers, 20.v.2007, KNAA.

***Anaspis garneysi* Fowler, 1889 – Uncommon**

Found rather widely but sparingly in Northern Ireland. **H33** Fermanagh: Crom Castle Park (H3624), hawthorn blossom, 18.v.2005, and Inisherk (H357248), FIT, 23.v.2007, KNAA; Old Crom Castle (H364239), swept, 24.v.2012, KAB. **H37** Armagh: Loughgall Forest (H909517), on *Crataegus* flowers, 14.v.2005, RA. **H38** Down: Rostrevor, Oakwood NNR, on *Acer pseudoplatanus* foliage, 21.v.2005, RA; Rostrevor, Oakwood NNR (J1817), 23.v.2007, and FIT, 11.vii.2007, KNAA. **H39** Antrim: Great Deer Park, Glenarm (D2911), 13.vi.2007; Glenarm Woods ASSI (D3010), 10.vii.2007, KNAA. **H40** Londonderry: Ness Wood ASSI (C5211), 7.vii.2007; Banagher Glen (C670045), FIT, 8.vii.2007, KNAA.

***Anaspis lurida* Stephens, 1832 – Rare**

Like other species, the adults attracted to blossom, including that of *Sambucus nigra*. **H39** Antrim: Cullybacky (D0505), WFJ (Johnson, 1891) '*A. subtestacea*' (Johnson and Halbert, 1902); Rea's Wood, Antrim (J1485), sweeping carr, 30.vi.1986, RCW (Welch, 1986).

***Anaspis maculata* (Geoffroy in Fourcroy, 1785) – Common and widespread**

Very frequent at *Crataegus* and other blossom. Common. **H33, H36, H37, H38, H39, H40.**

***Anaspis regimbarti* Schilsky, 1895 – Common and widespread**

Common across Northern Ireland. **H33, H36, H37, H38, H39, H40.**

***Anaspis rufilabris* (Gyllenhal, 1827) – Common and widespread**

Common at blossom across Northern Ireland. **H33** Fermanagh: Molly Mountain (H237279), 23.vi.1995, RA; Inisherk (H357243), 27.vi.2000, RA; Castle Coole Park (H2643), 2.vi.1992, 17.vi.2006 and 18.v.2007; Correl Glen (H074537), 17.v.2007, KNAA; Crom Castle Park (H3624), 18.v.2007, KNAA; Knockninny NR (H275303), 13.v.2008, RA; Finlane, Florencecourt (H172324), 28.v.2010, RA. **H36** Tyrone: Ballybriest, Lough Fea (H762867), 5.vi.1994, RA; Baronscourt Park (H3682), 15.vi. and 25.vii.2006, KNAA; Wood Lough (H762603), 24.v.2012, RA; Parkanaur Forest (H739614), 30.vi.2020, MDB. **H37** Armagh: WFJ det. GCC (Johnson and Halbert, 1902); Peatlands Park (H897613), 11.vi.2012, KAB; Derryadd Lough (H905605), 21.v.2007, RA; Annagarriff NNR (H900616), 22.v.2007, RA; Tynan Abbey (H761425), 1.vii.2011, RA. **H38** Down: Bohill Breagah (J397461), 2.vii.1986, RCW (Welch, 1986); Rostrevor, Oakwood NNR (J1817), 23.v.2007, KNAA; Belvoir Forest (J3469), 3.vii.1986, RCW (Welch, 1986); Leitrim Lodge (J225254), 21.v.2005, RA; Altataggart (J222237), 9.vii.2005, RA. **H39** Antrim: Lagan Canal near Lisburn (J2663), coll. CWB det. GCC (Johnson and Halbert, 1902); Rea's Wood (J1485), 30.vi.1986, RCW (Welch, 1986); Farr's Bay (J089870), 4.vii.1986, RCW (Welch, 1986); Rea's Wood NNR (J1587), 16.vi.1999, RSK; Feystown (D315104), 4.v.1996, UIWT; Great Deer Park, Glenarm (D2911), 13.vi.2006; Glenarm Woods ASSI (D2911), 22.v. and 10.vii.2007, KNAA; Breen Wood (D1233), 21.v.2007, KNAA; Belfast Castle (J327788), 23.v.2004, RA; River Lagan, Newforge (J330697), 15.vi.2004, RA; Colin Glen (J267721), 15.v.2005, RA; Shane's Castle Estate (J113884), 1.vii.2010, RA. **H40** Londonderry: Umbra (C728355), 17.vii.1995; Springhill Park (H8683), 25.vi.1992, KNAA; Banagher Glen (C670045), 20.v. and 8.vii.2007, KNAA; Ness Wood ASSI (C528118), 2.vii.2007, KNAA; Drumlamph Wood (C835034), 10.vi.2001, RA.

FAMILY CERAMBYCIDAE longhorn beetles

Very poorly represented in the saproxylic fauna of Northern Ireland, probably because many members of this group are thermophilic and climatic conditions here are largely unsuitable.

***Rhagium bifasciatum* Fabricius, 1775 – Common and widespread**

Found living in 2000 year old pine stumps exposed from beneath bogs (Speight, 1988) and more generally on pine and other conifers in modern plantations. Also occasionally in dead broadleaf wood. **H33, H36, H37, H38, H39, H40.**

***Rhagium mordax* (De Geer, 1775) – Widespread**

Most often found in *Quercus* stumps, and, much less commonly, on a range of other broadleaf trees. Usually only in old growth oak woods. **H33** Fermanagh: Ballinamallard (H2652) (Johnson and Halbert, 1902); Correl Glen (H075545), 1988, RA; Castle Caldwell NR (H0260), 1992, KNAA; Crom Castle Estate (H32), 1992, 2002, KNAA; Crom Castle (H360240), 18.v.2007, KNAA; Reilly Wood (H339242), 28.v.1992, KNAA; Corlatt Wood

(H358236), 27.v.1992, KNAA; Isle Namanfin (H160560), 1993, RA; Florencecourt (H175344), 1997; (H183343), 2010, RA; Inisherck Island (H355242), 2000, RA; Castle Coole Park (H2643), 2006, KNAA; Rossyvvullan, Castle Coole (H264430), 28.vii.2010, RA. **H36** Tyrone: W. F. de V. Kane (Fowler, 1891; Johnson and Halbert, 1902). Caledon Deer Park (H7543), 2006, KNAA. **H37** Armagh: Tynan Abbey Estate (H762420), 1.vii.2011, RA. **H38** Down: Tollymore Park, WFJ (Johnson and Halbert, 1902). **H39** Antrim: Shane's Castle Oakwood (J093881), 22.xi.1988, RA; Great Deer Park, Glenarm (D2911), 2006, KNAA; Glenarm Woods ASSI (D3011), 2007, KNAA; Moss Plantation, Shane's Castle (J093893), 2010, RA; Glenarm NR (D3091142), 8.vi.2011, RA. **H40** Londonderry: Walworth Wood (C6220), CWB (Buckle, 1900; Johnson and Halbert, 1902). Ness Wood ASSI (C528118), 2007, KNAA.

***Grammoptera abdominalis* (Stephens, 1831) syn. *G. variegata* (Germar, 1824) – Doubtful**

The Murlough, Co. Down, record given in Alexander and Anderson (2012) is now considered incorrect. **H38** Down: near Belfast, 1885, Haliday – “an Irish specimen [of *Grammoptera analis*] in Haliday collection” (Johnson and Halbert, 1902).

***Grammoptera ruficornis* (Fabricius, 1781) – Common and widespread**

This species is “Common in Ireland” (Johnson and Halbert, 1902). In northern counties, it is the most widely dispersed and common longhorn found easily in most places feeding at *Crataegus* blossom. **H33, H36, H37, H38, H39, H40.**

***Stictoleptura rubra* (L., 1758) red longhorn – Recent arrival (Plate 4)**

The female of this species is a large and eye-catchingly red insect which has attracted some interest in Irish social media. It feeds within dead wood and the stumps of coniferous trees (*Picea*, *Pinus*, *Abies*, *Larix*) and has a life span of 2-3 years. It has been seen in recent years across Ireland, from The Raven in Co. Wexford to Thornhill Park, Upper Newtownards Road, Belfast where a female was observed by CM flying lazily about in the early evening of 7 August 2020, and photographed on a windowsill where it landed. **H38** Down: Upper Newtownards Rd., Belfast (J39287374), one in flight, urban garden, 7.viii.2020, CM (Anderson *et al.*, 2021).

***Alosterna tabacicolor* (De Geer, 1775) – Rare**

Larvae develop in old damp rotten stumps of hazel, hornbeam, maple, pine, etc, often boring deeply into sapwood; adults attracted to blossom. Local in Ireland (Johnson and Halbert, 1902); possibly a relict ancient woodland species (Alexander, 1997a). **H33** Fermanagh: Reilly Wood, Crom (H337253), 28.v.1992; Gole Wood, Crom (H333252), 1.vi.1992, KNAA (Alexander, 1997a). **H38** Down: near Belfast, AHH (Haliday, 1885; Johnson and Halbert, 1902). **H39** Antrim: Great Deer Park, Glenarm (D2911), 13.vi.2006; Glenarm NR (D3010), 22.v.2007, KNAA; (D304108), (D304117), 14.vi.2011, (D301100), 20.vi.2012, RA. **H40** Londonderry: Ness Wood (C524113) common on flowers etc., 31.v.2017, MDB.

***Rutpela maculata* (Poda, 1761) – Rare**

Associated with both broadleaf and coniferous trees but particularly *Betula*. Adults are

attracted to blossom, particularly Umbelliferae. Rare and declining in Northern Ireland but apparently stable elsewhere in Ireland. Now absent from its former stronghold in Tollymore Forest, Co. Down. Status in Co. Fermanagh uncertain. **H33** Fermanagh: Inishdivann, Lough Erne (H1853), 9.viii.1936, anon., UM. **H38** Down: near Belfast, 1885, AHH (Johnson and Halbert, 1902); Tollymore Forest (J353324), 9.vii.1976, 16.viii.1985, 6.viii.1986, RA.

***Asemum striatum* (Linnaeus, 1758) – Established introduction**

Mainly in or around *Pinus* stumps and exposed roots. Found very sparingly in plantation forests. **H40** Londonderry: Umbra NR (C724357), several emerging from *Pinus contorta* roots, 1.vi.2011, RA/MDB.

***Aromia moschata* (Linnaeus, 1758) musk beetle – Rare**

The headquarters of this species in Ireland are the Killarney and Glengarriff districts in Cos Cork and Kerry, and it is “very rare or absent from most districts in the north and east of Ireland” (Stelfox, 1959). No records subsequent to the report for Seaforde Demesne. **H38** Down: near Belfast, AHH (Haliday, 1885; Johnson and Halbert, 1902); Seaforde Estate (J4043), female reared from insect bored willow trunk material, coll. 11.viii.1988, emerged 2.ii.1989, RN (Nash, 1989).

***Phymatodes testaceus* (Linnaeus, 1758) – Established introduction**

Known to be transported in oak logs and unknown in Ireland until the records given here for Tynan Abbey. **H37** Armagh: Tynan Abbey Estate (H760425), 3 specimens and numerous exit holes, under tight bark on the underside of a sundered *Quercus* branch, about 2m above the ground, veteran parkland *Quercus*, 1.vii.2011, MDB/RA (Bryan and Anderson, 2011); (H761416), 1 specimen with 14 exit holes in a *Quercus* limb jammed against a trunk, 26.vii.2011, RA/MDB.

***Clytus arietis* (Linnaeus, 1758) wasp beetle –Casual introduction**

Very rare in Ireland if indeed it is at all autochthonous. Occasionally imported with timber products (O'Connor and Nash, 1981). In Northern Ireland known only from timber imports. **H38** Down: Castlereagh, Belfast (J3771), one emerged from timber imported from Scandinavia, 18.iii.1980, T. Hedley (O'Connor and Nash, 1981). **H39** Antrim: Cranmore, Belfast (J3271), one in coll. of Belfast Natural History and Philosophical Society, taken by R. Templeton. **H40** Londonderry: Magherafelt (H8990), emerged into house living space, from (?) furniture or roof timbers, 2.ii.1984, RN.

***Pogonocherus hispidulus* (Piller and Mitterpacher, 1783) – Rare**

Larvae under bark of recently dead branches or thin stems of broadleaves; especially hazel and apple. Ireland (1885, Haliday). ‘*P. bidentatus*’ in Johnson and Halbert (1902). May be confined to ancient woodlands. **H37** Armagh: Loughgall Manor (H9152), one found in grounds by Mrs Johnson (Johnson, 1892a). **H38** Down: Rostrevor Oakwood NNR (J1817), 1 in moth trap, 8.vi.1999, R. Thompson det. BN (Anderson, Simms and Nelson, 2000). **H39** Antrim:

Great Deer Park, Glenarm (D2911), one in FIT in old hazel stand, 6.vi.2006, KNAA.

***Pogonocherus hispidus* (Linnaeus, 1758) – Rare**

Occurs in association with a variety of broadleaf trees, but rare in Northern Ireland. **H33** Fermanagh: Inishfendra, Crom (H3623), 28.v.1992, APF (Alexander, 1997a). **H37** Armagh: Derrycarne Road, Portadown (J008576), beaten off apple tree in orchard, 8.ix.1998, BN. **H39** Antrim: Bucklebrook House (J138668), on a domestic washing line, 14.vii.2013, KAB. **H40** Londonderry: Carndaisy Glen (H833857), fallen off *Corylus* branch, 5.x.2013, DN/RA; (H827859), on dead twig of standing *Ilex*, 4.iv.2017, RA.

***Leiopus nebulosus* (Linnaeus, 1758) – Scarce**

Very local in Northern Ireland on *Quercus*, *Fagus* and *Castanea*. **H33** Fermanagh: Crom Castle Park (H359246), 1 from aerial twigs of fallen *Quercus* branch, 6.vii.2007, KNAA. **H36** Tyrone: Caledon Deer Park (H7543), 26.vii.2006, KNAA; Parkanaur (H733612), under bark of dead oak, 1.vi.2020, MDB. **H37** Armagh: Tandragee Castle (J0246), 7.v.1896, WFJ (Johnson, 1896); Tynan Abbey Estate (H7612421), 1 dead under tight bark of standing dead *Fagus*, 1.vii.2011, RA/MDB; (H761423), 9 adults on lower branches of large *Castanea sativa*, 1.vii.2011, MDB/RA. **H38** Down: near Belfast, AHH (Haliday, 1885; Johnson and Halbert, 1902).

FAMILY CURCULIONIDAE weevils

Saproxylic weevils generally live in dead wood and bore galleries in the wood where they shelter and feed.

***Rhopalomesites tardyi* (Curtis, 1825) holly weevil – Common and widespread (Plate 4)**

In Northern Ireland the relatively large galleries of this species, which can form a honeycomb structure in well-rotted heartwood of broadleaf trees, is a familiar sight. Probably commonest on *Acer pseudoplatanus* but also on *Ilex* and other broadleaves. Ireland appears to have most of the world population of this species and it is much rarer and largely coastal in western Britain. “Locally abundant in wooded districts throughout Ireland” (Johnson and Halbert, 1902). **H33, H36, H37, H38, H39, H40.**

***Pseudophloeophagus aeneopiceus* (Boheman, 1845) – Rare**

In damp rotten timber of various broad-leaved trees, in coastal woods and other coastal situations; also in driftwood; rare in buildings. *Caulotrypis* in Johnson and Halbert (1902). **H38** Down: Killard NNR (J6043), in driftwood, 24.iv.2007, MGT.

***Euophryum confine* (Broun, 1881) – Widespread established introduction**

This species is an immigrant from New Zealand and has become spectacularly abundant in dead wood where conditions, damp, well-rotted, suit it. Dense galleries are often formed under bark of both coniferous and broadleaf trees leading to the abundant accumulation of fine woody debris. First recorded by Hickin (1952) but Anderson (1984) has summarised Irish records, with

others added by McClenaghan (1987). **H33, H36, H37, H38, H39, H40.**

***Pentarthrum huttoni* Wollaston, 1854 – Established introduction**

Rare introduction which bores in household furniture and wooden structures. **H39** Antrim: Belfast Docks (J3676), 1942-1946, AFO (O'Farrell and Butler, 1948); Larne (D4002), in hardwood panelling in a Council building, 24.xi.1985, RA.

***Cryptorhynchus lapathi* (Linnaeus, 1758) – Scarce**

Bores into dead trunks of *Alnus*, *Populus*, *Salix* and *Betula*, occasionally “in some numbers on bark of willows” (Johnson and Halbert, 1902). **H37** Armagh: Coney Island (H9364), Lough Neagh, WFJ (Johnson, 1895; Johnson and Halbert, 1902); Brackagh Moss NNR (J0251), 16.vi.1999, R. Key. **H39** Antrim: near Gawley's Gate (H9985), Lough Neagh, two beaten from osiers, ix.1935, WMC (Crawford and O'Mahony, 1935); Montiaghs Moss ASSI (J092655), 16.vi.1999, A. P. Fowles; Divis Mountain (J267742), 17.vi.2010, RA.

***Acalles misellus* Boheman, 1844 syn *A. turbatus* nec Boheman, 1844 – Scarce**

A species found in trees and shrubs in hedgerows and may bore into *Hedera* stems. Widespread and not uncommon. **H33** Fermanagh: Inisherk, Crom (H353244), in tray below FIT, 8.viii. – 4.ix.1992, APF (Alexander, 1997c); Crom Castle Park (H359246), 6.vii.2007, KNAA. **H38** Down: Hillsborough Forest (J247579), pitfall, 28.v.1993, RA (Alexander, 1997c); Belvoir Forest (J346694), 27.viii.1993, RA; Donard Demesne (J373299), 31.xii.2011, RA, (J372298), 9.i.2012, RA. **H39** Antrim: Ballycastle (D1140), BT (Johnson and Halbert, 1902); Craigagh Wood (D227323), one under bark on fallen *Fagus* branch, 17.vi.1992, KNAA (Alexander, 1997c). **H40** Londonderry: Foyle district, CWB (Buckle, 1900; Johnson and Halbert, 1902)

***Acalles pinoides* (Marsham, 1802) – Rare old growth species**

Develops in dead twigs on trees; litter layer of lowland *Quercus* woods; ancient woodland and old heathland; a reliable marker of old growth (Crowson 1987). Only three modern localities known. **H38** Down: Murlough NNR (J400342), in moss on dunes, 16.vii.2013, RG.

***Xenosacalles irlandikos* Stüben *et al.* (2024) – Alien introduction of unknown origin**

Little is known of the feeding habits or life history of this species which has been recorded from northern counties since 2011, with most records for the greater Belfast area where it has been detected on fence posts and under bark in wooded areas. The two earliest records were for sub-cortical niches on fallen silver fir in Donard Park, Newcastle, Co. Down, RA. From 2023 to 2024 a number of specimens were collected on softwood fence posts in Crawfordsburn Park, Glenlyon, Holywood, Belvoir Park Forest, Co. Down and Colin Glen Forest, Co. Antrim, JS and SR. The genus and species are novel and it does not appear closely related to taxa within the Western Palearctic (Stüben *et al.*, 2024).

***Magdalis armigera* (Fourcroy, 1785) – Rare**

Mostly boring in stems of *Ulmus glabra* in Ireland. **H33** Fermanagh: Castle Coole Park

(H251429), abundant on re-growth from base of dead *Ulmus*, 2.vi.1992, KNAA (Alexander, 1997c).

***Magdalis carbonaria* (Linnaeus, 1758) – Rare**

Found boring into *Betula*, possibly *Corylus*. **H39** Antrim: Glenarm Nature Reserve (D304110), 2 swept off sprouting *Corylus*, RA. **H40** Londonderry: Banagher Glen (C672045), 8.vii.2007, KNAA.

***Hylobius abietis* (Linnaeus, 1758) – Established introduction**

Associated with *Pinus sylvestris*. “Locally common about fir plantations” (Johnson and Halbert, 1902). A common conifer pest (Morris, 1993, 1997). **H33, H36, H37, H38, H39, H40.**

***Pissodes pini* (Linnaeus, 1758) – Recent Introduction**

An imported pest species which bores into the stems and roots of *Pinus* spp. **H33** Fermanagh: Ely Lodge Forest (H172522), larvae and adults at base of *Pinus sylvestris*, 22.iv.1997, SC (Clawson and Anderson, 2006).

Family CURCULIONIDAE Subfamily SCOLYTINAE bark beetles

Bark beetles develop in living and dead phloem and cambium tissue of a wide range of trees and are important pests of commercially grown timber. *Scolytus scolytus* the elm bark beetle is well known as a vector of Dutch elm disease, which has caused the widespread destruction of elms in Britain and Ireland. Other genera and species of bark beetle infest and damage diseased or weakened specimens of many of the coniferous trees used in commercial forestry and a constant watch is kept for their appearance in this country. Yet other species are associated more with dead timber and are of less commercial importance.

***Scolytus rugulosus* (Müller, P.W.J., 1818) small fruit tree bark beetle – Rare**

Mainly on apple trees in orchards. Known only from a single specimen captured in a small orchard on Inisherk Island, Crom Castle, Co. Fermanagh, 24.v.2009 (Foster, 2011). **H33** Fermanagh: Inisherk, Crom (H357241), beaten from an old apple tree in an abandoned orchard, 24.v.2009, APF.

***Scolytus scolytus* (Fabricius, 1775) common elm bark beetle – Widespread**

Mainly on *Ulmus*, although also on other broad-leaved trees. First found in Ireland in 1943 (Quirke, 1943) although probably widespread and well established. Has had a catastrophic effect on populations of mature *Ulmus* but particularly the English elm in Ireland. The native wych elm *Ulmus glabra* has been able to persist in most areas but mature individuals have become rare. Young trees are less affected because the beetle is unable to establish on narrower stems, but once large enough, most trees succumb. **H33** Fermanagh: Crom Castle Park (H32), 1.vi.1992; Castle Coole Park (H2643), 2.vi.1992 and 30.iii.2006, KNAA. **H38** Down: Mount Stewart Demesne (J5570), 18.viii.1992; Rowallane Estate (J409575), 22.ix.2004; Castleward Park (J5649), 2.iv.2006, KNAA. **H39** Antrim: Collin Glen (J270720), 19.v.1992; Great Deer

Park, Glenarm (D2911), galleries widely, 2006, KNAA. **H40** Londonderry: Springhill (H8683), 25.vi.1992, KNAA.

***Dryocoetes autographus* (Ratzeburg, 1837) – Established introduction**

In dead and dying conifers. Until recently, reported in Ireland only as imports (O'Mahony, 1935b; O'Connor *et al.*, 1991). **H36** Tyrone: Ballyard, Trillick (H3458), on silver fir, 1.vii.1997, SC; Pomeroy Forest (H7072), on silver fir, 2.vi.1998, SC. **H37** Armagh: Camlough Wood (J0524), under bark at base of *Picea abies*, 7.vi.2004, SC; Slieve Gullion Forest (J038196), bred from *Picea sitchensis* bark, MDB det. RA; Ballymoyer Wood (H974311), reared from *Tsuga heterophylla* wood, 2.ii.2012, MDB det. RA. **H38** Down: Hillsborough Forest (J2558), adults emerging from bark on *Picea abies* thinnings, 11.iv.1995, RA. **H39** Antrim: Farr's Bay NNR (J0887), in *Picea* logs, 4.vii.1986, RCW (Welch, 1986); Randalstown Forest (J0888), on *Picea sitchensis*, 8.ix.1993, SC.

***Dryocoetes villosus* (Fabricius, 1793) – Uncommon**

Develops in relatively thick bark of freshly dead *Quercus* boughs and trunks; also known from *Castanea*, *Fagus* and *Tilia*. **H33** Fermanagh: Reilly Wood, Crom (H3624), in thick bark of live open-grown *Quercus* outside wood edge, 28.v.1992 (Alexander, 1997d); Inisherk Island (H353244), FIT, 1.vi.–7.vii.1992, APF (Alexander, 1997d) and FIT, 6.vii.2007, KNAA; Castle Coole Park (H2643), 19.v and 17.vi.2006, KNAA. **H36** Tyrone: Caledon Deer Park (H7543), various dates, 2006, KNAA. **H37** Armagh: Slieve Gullion Forest (J038193), on *Quercus*, 8.iii.2012, RA. **H38** Down: Rostrevor Oakwood NNR (J1817), 28.vi.1992 and 11.vii.2007, KNAA (Alexander, 1997d); Castleward Park (J5649), 23.viii.1998, KNAA; Tullyframe, Mourne Park (J265168), on *Quercus* bark, 27.iii.2012, MDB/RA. **H39** Antrim: Great Deer Park, Glenarm (D2911), various dates, 2006, KNAA. **H40** Londonderry: Walworth Wood (C6221), July, CWB (Johnson and Halbert, 1902).

***Orthotomicus laricis* (Fabricius, 1792) lesser larch bark beetle – Established introduction**

Develops under bark and can kill weakened conifers, chiefly *Pinus*. First noted in Ireland by O'Mahony (1934). **H33** Fermanagh: Rosslea Wood (H545315), on *Pinus sylvestris*, 15.iii.1993, SC.

***Pityogenes bidentatus* (Herbst, 1783) two-toothed pine beetle – Established introduction**

Attacks the branches mainly of *Pinus sylvestris*. Rare in Northern Ireland. **H37** Armagh: Armagh (H84), in a garden, WFJ (Johnson, 1892a). **H38** Down: Belvoir Forest (J3469), galleries under bark of dismasted larch, 16.v.1996, RA. **H39** Antrim: Shane's Castle (J1188), vi.1902, JNH (Halbert, 1910b); vi.1923, OEJ (Janson, 1924).

***Pityogenes trepanatus* (Nördlinger, 1848) – trepanned bark beetle – Established introduction**

A single female specimen of *Pityogenes trepanatus* (Nördlinger, 1848) was caught in a cross-

vane (flight interception) trap placed in a compartment of Lodgepole Pine (*Pinus contorta* Douglas ex Loudon) in Crocknagrally Forest (H482430) in Co. Fermanagh, from 6-23 June 2023. This was part of a Protected Zone quarantine pests study in Northern Ireland, FS, AFBI. The species is new to Ireland and is a minor pest of pine trees (Spaans *et al.*, in press).

***Trypodendron domesticum* (Linnaeus, 1758) ambrosia beetle – Uncommon old growth species**

An ambrosia beetle, developing in the sapwood of a wide range of freshly dead broadleaf timber including *Quercus*, *Acer*, *Alnus*, *Fagus*, *Betula* and *Fraxinus*. Adults excavate deep galleries in sappy timber and consume fungi cultivated in them. **H33** Fermanagh: Castle Coole Park (H260430), fragments in decaying *Quercus* branch, 2.vi.1992, KNAA (Alexander, 1997d); Inisherker, Crom (H353244), two in FIT, 1.vi.–7.vii.1992 and another 5.viii.–4.ix.1992, APF (Alexander, 1997d); Lough Yoan (H2542), 2.vi.1992, KNAA; Correl Glen (H074545), FIT, 5.vii.2007, KNAA; Colebrooke Park (H406446), 25.x.2012, under bark, *Quercus* limb, RA; Florencecourt (H179335), under bark *Fraxinus* log 18.iv.2014, MDB. **H38** Down: Morelands Meadow (J337697), under bark, *Fagus* logs, 18.xi.1992, RA (J338698), under bark of *Quercus* limb, 7.ii.2012, RA. **H39** Antrim: Great Deer Park, Glenarm, FITs, 20.v.2006, KNAA; Carr's Glen (J313788), under bark on *Corylus*, 23.iii.2010, RA; Rea's Wood (J138849), under burnt bark of *Acer pseudoplatanus*, RA; Barnett's Park (J328687), Belfast, under bark on *Quercus* branch, 25.iii.1982, RA. **H40** Londonderry: Drenagh Demesne (C6923), 14.vi.2006, KNAA.

***Trypodendron lineatum* (Olivier, 1795) conifer ambrosia beetle – Established introduction**

Dead wood of pine, spruce, larch, and fir. **H37** Armagh: Slieve Gullion Forest (J040196), hibernating under *Fraxinus* bark (!), 8.iii.2012, RA. **H39** Antrim: Farr's Bay NNR (J089870), attacking *Picea* stumps, 4.vii.1986, RCW (Welch, 1986).

***Hylesinus crenatus* (Fabricius, 1787) large ash bark beetle – Scarce**

Chiefly in large old dying ash, very local. **H33** Fermanagh: Old Crom Castle (H364239), swept near lakeshore, 24.v.2012, KAB. **H39** Antrim: Bucklebrook House (J137668), sugared red wine bait trap, 12.vi.2020, MDB.

***Hylesinus varius* (Fabricius, 1775) common ash bark beetle – Widespread**

Found on fallen *Fraxinus* limbs, widespread but uncommon. **H33** Fermanagh: Crom Castle Park (H3524), 26.v.1992, KNAA. **H36** Tyrone: Caledon Deer Park (H7543), 17.v.2006, KNAA. **H37** Armagh: Jerrettspass (J0633), 13.xii.1912, WFJ (Johnson, 1912); Loughgall Country Park (H911516), 15.iv.2008, RA; Glebe Hill, Tandragee (J033452), 25.ix.2018, RA. **H38** Down: Belfast (J37), 28.x.1986, Forest Service Collection (O'Connor *et al.*, 1991); Castleward Park (J5649), 21.v.2006, KNAA. **H39** Antrim: Moss Plantation, Shane's Castle (J092893), 16.vii.2010, RA.

***Hylastes brunneus* Erichson, 1836 – Established introduction**

Attacks diseased or dying *Pinus* spp. across Ireland can be a serious pest in forestry

plantations. **H36, H37, H38, H40.**

***Hylastes cunicularius* Erichson, 1836 – Established introduction**

Widespread in commercial spruce plantations across Northern Ireland. **H36, H37, H38, H39, H40.**

***Hylurgops palliatus* (Gyllenhal, 1813) – Established introduction**

Widespread and common under bark of dead conifer timber (O'Connor *et al.*, 1991). **H33, H36, H37, H38, H39, H40.**

***Polygraphus poligraphus* (L., 1758)– Established introduction**

Recently found by cross-vane trap in commercial Conifer plantations at Crocknagrally, Beaghs Mountain. Also known from sites in **H33, H36, H38, H39.**

***Tomicus piniperda* (Linnaeus, 1758) pine shoot beetle – Established introduction**

On both dead and living *Pinus sylvestris* in plantation, leaving tell-tale yellow resin spots where it burrows through bark. Widespread in Ireland (O'Connor *et al.*, 1991). **H36, H37, H38, H39, H40.**

Analysis

A total of 243 species are represented above. The main differences between the all-Ireland (Alexander and Anderson, 2012) and the current Northern Ireland list relates to a number of thermophilic species which are absent from northern counties in Ireland. Conspicuous among the absentees are species of the family Cerambycidae or longhorn beetles. The family in Ireland has a total of 22 species whereas Northern Ireland has only 14 species one of which (*Rutpela maculata*) may now be extinct. There is also a group of species not usually regarded as saproxylic and which were not included in the all-Ireland list. These belong to the Staphylinidae, Aleocharinae, genus *Atheta* and allies which occur frequently in forest fungi, both gilled fungi and wood-rotting bracket fungi. Whatever their affinities, saproxylic or non-saproxylic, they are included here because of their sheer abundance in the forest biome and close relationship with wood-rotting fungi.

The saproxylic Coleoptera as a group has been growing in number of species in Ireland, particularly in recent years as climate warming has ameliorated the climate. There seems to be two main routes of entry for natural colonisation, across the northern Irish Sea and North Channel from southern Scotland and northern England to Co. Antrim, and across the southern Irish Sea to south-eastern counties of Ireland. A number of species which entered Co. Antrim in this way are still making their way southwards across Ireland. Species which have entered by the southern route are spreading north and some have not yet reached Northern Ireland. One that has and has spread across Ireland with extraordinary speed is the red longhorn beetle *Stictoleptura rubra* which was first seen in a garden in Dublin in July 2016 but had reached Belfast by 2021.

The species listed below have been added to the fauna of saproxylic Coleoptera in Ireland since the publication of Alexander and Anderson in 2012. At least one of these may not be fully naturalised and is therefore of uncertain status i.e. *Prionus coriarius*. The rest are assumed to be established and/or are overlooked natives. *Alaobia subglabra*: H37; *Alaobia taxiceroides*: H36; *Anisotoma castanea*: H36; *Atheta autumnalis*: H36; *Bisnius subuliformis*: H37; *Gyrophæna congrua*: H18, H33, H36, H37, H39, H40; *Gyrophæna munsteri*: H18, H33, H36, H37, H39, H40; *Prionus coriarius*: H22; *Scolytus laevis*: H8; *Sepedophilus lusitanicus*: H2, H38; *Stictoleptura rubra*: H12, H14, H15, H21, H38.

It seems worthwhile to list the better sites for saproxylic Coleoptera in Northern Ireland (Table 1). This has been done twice before but much progress in recording fauna has been made in recent years. No attempt has been made to score individual species in this exercise as was attempted previously. The Irish fauna is still insufficiently known to ascribe rarity indices with any confidence. Instead, only the totals of saproxylic species recorded at each site are given with rare species appended opposite the site name.

TABLE 1. Species totals for recorded sites with list of rare species

Site	Species total	‘Rare’ species
Crom Castle Estate	40	<i>Gyrophæna hanseni</i> , <i>Alosterna tabacicolor</i>
Castle Coole	38	<i>Hapalæraea pygmaea</i> , <i>Euplectus infirmus</i> , <i>E. karstenii</i> , <i>E. piceus</i> , <i>Phloiophilus edwardsii</i> , <i>Magdalis armigera</i>
Belvoir Forest/Morelands	31	<i>Atheta pilicornis</i> , <i>Ischnoglossa prolixa</i> , <i>Cryptophagus denticulatus</i>
Inisherck Island	30	<i>Anisotoma orbicularis</i> , <i>Gyrophæna hanseni</i> , <i>Dorcatoma dresdensis</i> , <i>Soronia punctatissima</i> , <i>Scolytus rugulosus</i>
Shane’s Castle	30	<i>Oligota apicata</i> , <i>Epuræa rufomarginata</i> , <i>Epuræa terminalis</i> , <i>Cryptophagus denticulatus</i>
Glenarm Deerpark/NR	29	<i>Orchesia minor</i> , <i>Alosterna tabacicolor</i> , <i>Pogonocherus hispidulus</i> , <i>Magdalis carabonaria</i>
Loughgall	28	<i>Alaobia taxiceroides</i> , <i>Dinaraea linearis</i> , <i>Ischnoglossa prolixa</i> , <i>Bisnius subuliformis</i> , <i>Aspidiphorus orbiculatus</i> , <i>Pogonocherus hispidulus</i>
Parkanaur Forest	26	<i>Anisotoma castanea</i> , <i>Placusa tachyporoides</i> , <i>Agathidium confusum</i> , <i>Placusa tachyporoides</i> , <i>Mycetæa subterranea</i> , <i>Tetratoma ancora</i>
Peatlands Park/Derryadd	24	<i>Dinaraea linearis</i> , <i>Litargus connexus</i>
Tynan Abbey	24	<i>Hapalæraea pygmaea</i>
Rostrevor Oakwood NNR	22	<i>Rhizophagus perforates</i> , <i>Tetratoma ancora</i> , <i>Orchesia minor</i> , <i>Pogonocherus hispidulus</i>
Rea’s Wood NNR	21	<i>Dinaraea lineari</i> , <i>Rhabocerus gabrieli</i> , <i>Anaspis lurida</i>
Baronscourt Demesne	20	<i>Phloiophilus edwardsii</i>
Florencecourt	19	<i>Agathidium confusum</i>
Derrymore House	18	<i>Hapalæraea pygmaea</i> , <i>Autalia longicornis</i>
Caledon Deer Park	17	
Bucklebrook House	15	<i>Soronia punctatissima</i> , <i>Gnathoncus nannetanus</i> , <i>Trox scaber</i> , <i>Pogonocherus hispidus</i>

TABLE 1 (Continued).

Mount Stewart Estate	15	<i>Abraeus perpusillus</i>
Lady Dixon Park	15	<i>Metoecus pardoxus</i>
Murlough Co Down	15	<i>Sphaeriestes ater</i>
Banagher Forest	14	<i>Acrulia inflata</i> , <i>Tetratoma ancora</i> , <i>Magdalis carbonaria</i>
Belfast Castle/Cave Hill	14	<i>Gnathoncus nannetensis</i> , <i>Ptinus fur</i> , <i>P. subpilosus</i>
Slieve Gullion Forest	13	<i>Xylostiba monilicornis</i> , <i>Ischnoglossa prolixa</i>
Castle Caldwell Forest	12	<i>Gyrophæna poweri</i> , <i>Epuraea melina</i> , <i>Litargus connexus</i>
Tollymore Forest	13	<i>Rutpela maculata</i>
Castleward Park	12	<i>Gyrophæna poweri</i>
Drenagh Estate	12	
Colebrook Park	11	<i>Agathidium confusum</i> , <i>Hapalaræa pygmaea</i>
Donard Park	11	<i>Xylostiba monilicornis</i> , <i>Henoticus serratus</i>
Glenmore Wood ASSI	11	<i>Acrulia inflata</i> , <i>Alaobia subglabra</i> , <i>Placusa tachyporoides</i>
Ness Wood NR	11	<i>Tetratoma ancora</i>
Barnett's Park, Belfast	10	
Farr's Bay NR	11	
Dundrum Castle	10	<i>Atheta pilicornis</i>
Springhill	10	
Correl Glen	9	<i>Anisotoma orbicularis</i> , <i>Agathidium confusum</i> , <i>Orchesia minor</i>
Inishfendra	9	<i>Biblopectus bicolor</i> , <i>Clambus punctulum</i> , <i>Pogonocherus hispidus</i>
Portmore Reserve/Estate	9	<i>Autalia longicornis</i>
Stormont	9	<i>Epuraea rufomarginata</i>
Magilligan/The Umbra	8	<i>Gonoderus luperus</i>
Breen Wood NNR	7	<i>Agathidium rotundatum</i>
Drumcairne Forest	7	
Knockmany Forest	7	<i>Euplectus mutator</i>
Deramore	6	<i>Cryptophagus intermedius</i>
Ely Lodge Forest	6	<i>Gyrophæna poweri</i>
Hydebank Woods	6	

TABLE 1 (Continued).

Mourne Park	6	
Brackagh Bog	5	<i>Aspidiphorus orbiculatus</i>
Brantry Lough	5	
Brookend NNR	5	<i>Atheta autumnalis</i>
Drum Manor	5	
Hollymount NNR	5	<i>Enicmus testaceus</i>
Murlough, Co Antrim	5	<i>Gnathoncus nannetensis</i> , <i>Agathidium rotundatum</i> , <i>Acalles ptinoides</i>
Seaforde Estate	5	<i>Sepedophilus lusitanicus</i> , <i>Autalia longicornis</i> , <i>Aromia moschata</i>
Seskinore Forest	5	<i>Enicmus testaceus</i> , <i>Gnathoncus nannetanus</i>
The Argory	5	
Clandeboyne	4	<i>Oligota apicata</i>
Edenderry, Belfast	3	<i>Euplectus mutator</i>
Fardross Forest	3	
Colin Glen	2	
Drumlamph Wood	2	<i>Acrulia inflata</i>
Favour Royal Forest	2	<i>Euplectus mutator</i> , <i>Oligota apicata</i>
Blessingbourne	1	<i>Enicmus testaceus</i>

References

- Alexander, K. N. A. (1997a) *Clytus arietis* (L.) rediscovered in Ireland after nearly 100 years, and other significant records of Cerambycidae (Coleoptera). *Irish Naturalists' Journal* **25**: 177-178.
- Alexander, K. N. A. (1997b) The distribution and status of the genus *Orchesia* Latreille (Coleoptera: Melandridae) in Ireland. *Irish Naturalists' Journal* **25**: 379-380.
- Alexander, K. N. A. (1997c) Some records for scarcer Curculionidae (Coleoptera). *Irish Naturalists' Journal* **25**: 449-450.
- Alexander, K. N. A. (1997d) Some records for scarcer Scolytidae (Coleoptera). *Irish Naturalists' Journal* **25**: 451-452.
- Alexander, K. N. A. (2002) The invertebrates of living and decaying timber in Britain and Ireland – a provisional annotated checklist. *English Nature Research Reports* **No. 467**. 142pp.
- Alexander, K. N. A. (2008) *Agathidium confusum* Brisout (Coleoptera: Leiodidae) a fungus beetle new to the Irish list. *Irish Naturalists' Journal* **29**: 45-46.
- Alexander, K. N. A. (2009) *Dorcatoma dresdensis* Herbst (Coleoptera: Anobiidae): a beetle new to the Irish list. *Irish Naturalists' Journal* **30**: 66.
- Alexander, K. N. A. (2010) The rediscovery of some of Ireland's rarest wood-decay beetles (Coleoptera: Lymexylidae, Phloiophilidae, Ciidae, Tetratomidae, Melandryidae). *Irish Naturalists' Journal* **30**: 130-33.
- Alexander, K. N. A. and Anderson, R. (2012) *The beetles of decaying wood in Ireland. A provisional annotated checklist of saproxylic Coleoptera*. Irish Wildlife Manuals **No. 65**. National Parks and Wildlife Service, Department of the Arts, Heritage and the Gaeltacht, Dublin, Ireland.
- Alexander, K. N. A. and Foster, A. P. (1995) *Abdera flexuosa* (Paykull) (Melandryidae) and *Tetratoma fungorum* Fabricius (Tetratomidae), beetles new to Ireland from bracket fungi on trees. *Irish Naturalists' Journal* **25**(1): 27-28.
- Anderson, R. (1977) *Endomychus coccineus* (L.) (Coleoptera: Endomychidae) new to Ireland. *Irish Naturalists' Journal* **19**: 97.
- Anderson, R. (1978) A recent Irish record of *Stenus exiguus* Erichson and *Sepedophilus littoreus* (L.), and *Gnypeta caerulea* (Sahlberg) (Col., Staphylinidae) new to Ireland. *Entomologist's Monthly Magazine* **113**(1977): 167.
- Anderson, R. (1984) Some recent Irish records of *Euophryum confine* Broun (Col., Curculionidae). *Entomologist's Monthly Magazine* **120**: 216.
- Anderson, R. (1985) A third Irish record of *Sepedophilus littoreus* (L.) (Coleoptera: Staphylinidae). *Irish Naturalists' Journal* **21**(12): 546.

- Anderson, R. (1992) A second Irish site for *Endomychus coccineus* (L.) (Coleoptera: Endomychidae). *Irish Naturalists' Journal* **24**(4): 170.
- Anderson, R. (1993) *Litargus connexus* (Fourcroy) (Coleoptera: Mycetophagidae) new to Ireland. *Entomologist's Gazette* **44**: 100
- Anderson, R. (1994) A first Irish record of *Ptinus subpilosus* Sturm (Col., Ptinidae). *Entomologist's Monthly Magazine* **130**: 136.
- Anderson, R. (1995) *Dacne bipustulata* (Thunberg) (Coleoptera: Erotylidae) in the Lagan Valley, Belfast. *Irish Naturalists' Journal* **25**(2): 78
- Anderson, R. (1998) Second Irish sites for *Abdera flexuosa* (Paykull) and *Enicmus testaceus* Joy and Tomlin (Coleoptera: Melandryidae and Latridiidae) in Fermanagh. *Irish Naturalists' Journal* **26**(1/2): 56.
- Anderson, R. (2004) *Micrambe bimaculata* (Panzer) (Cryptophagidae) on Lough Neagh, an ecological puzzle. *The Coleopterist* **13**: 135-136.
- Anderson, R. (2006) Additional Irish sites for *Tetratoma fungorum* Fabricius (Coleoptera: Tetratomidae). *Irish Naturalists' Journal* **28**: 302.
- Anderson, R. (2007a) *Epuraea distincta* (Grimmer) (Nitidulidae) new to Ireland. *The Coleopterist* **16**: 130.
- Anderson, R. (2007b) *Mycetophagus multipunctatus* Fabricius (Mycetophagidae) new to Ireland. *The Coleopterist* **16**: 100.
- Anderson R. (2008a) *Prionocyphon serricornis* (Müller) (Scirtidae) in Northern Ireland. *The Coleopterist* **17**: 123-4.
- Anderson, R. (2008b) New records for *Siagonium quadricorne* Kirby and *Atheta fungicola* (Thomson) and *Atheta crassicornis* (Fab.) (Coleoptera: Staphylinidae) added to the Irish list. *Irish Naturalists' Journal* **29**: 134-135.
- Anderson R. (2009a) *Margarinotus merdarius* (Hoffmann) (Histeridae) found in Ireland. *The Coleopterist* **18**: 66.
- Anderson R. (2009b) *Sphaeriestes reyi* (Abeille) and *Sphaeriestes ater* (Paykull) (Salpingidae) confirmed as Irish. *The Coleopterist* **18**: 80.
- Anderson, R. (2009c) *Autalia longicornis* Scheerpeltz (Staphylinidae) new to Ireland. *The Coleopterist* **18**: 165.
- Anderson, R. (2010) *Leptusa ruficollis* (Erichson) (Staphylinidae) new to Ireland. *The Coleopterist* **20**: 114.
- Anderson, R. (2011) The status of *Bessobia fungivora* (Thomson) (Staphylinidae: Aleocharinae) in Ireland. *The Coleopterist* **20**: 44.
- Anderson, R. (2018) *Atheta autumnalis* (Erichson) (Staphylinidae) new to Ireland with a comment on *Atheta basicornis* (Mulsant and Rey) in Ireland. *The Coleopterist* **27**(2): 69.

- Anderson, R. and Bryan, M. D. (2023) *Placusa tachyporoides* (Waltl, 1838), Staphylinidae) new to Ireland, and *Glischrochilus quadriguttatus* (Fabricius, 1777) (Nitidulidae) attracted to sugared wine traps. *The Coleopterist* **32**(2): 115.
- Anderson, R. and Bryan, M. D. (in press) *Sepedophilus lusitanicus* Hammond (Staphylinidae: Tachyporinae) new to Ireland. *The Coleopterist*.
- Anderson, R. and Clawson, S. (2004) *Leptusa norvegica* Strand (Staphylinidae) in Ireland. *The Coleopterist* **13**: 161.
- Anderson R. and Clawson S. (2006) *Atomaria pulchra* Erichson (Cryptophagidae) new to Ireland. *The Coleopterist* **15**: 100-101.
- Anderson, R. and Foster, A. P. (2011) *Atheta paracrassicornis* Brundin (Staphylinidae) new to Ireland. *The Coleopterist* **20**: 75-76.
- Anderson, R. and Hart, A. (2023) *Henoticus serratus* (Gyllenhal, 1808) (Cryptophagidae), a recent Irish record from Co. Fermanagh. *The Coleopterist* **32**(2): 67.
- Anderson, R. and Mantell, A. (2023) *Nudobius lentus* (Gravenhorst, 1806) (Staphylinidae) new to Ireland. *The Coleopterist* **31**(2): 81.
- Anderson, R., Nash, R. and O'Connor, J. P. (1997) A revised and annotated list of Irish Coleoptera. *Irish Naturalists' Journal Special Entomological Supplement 1997*: 1-81.
- Anderson, R., Nelson, B., O'Hara, L. M., Somers, P., Weyman, G., Cooney, C. and Mason, C. (2021) *Stictoleptura rubra* (L.) (Coleoptera: Cerambycidae) new to Ireland. *Irish Naturalists' Journal* **38**: 56-58.
- Anderson, R., Simms, M. and Nelson, B. (2000) *A Review of Lowland Wood Pasture and Parkland in Northern Ireland*. Report to Environment and Heritage Service, Northern Ireland.
- Bryan, M. D. and Anderson, R. (2011) *Phymatodes testaceus* (Linnaeus) new to Ireland and *Leiopus nebulosus* (Linnaeus) (Cerambycidae) found at Tynan, Co. Armagh. *The Coleopterist* **20**: 97.
- Buckle, C. W. (1900) Beetles collected in Lough Foyle district, Cos Donegal and Derry. *Irish Naturalist* **9**: 2-11 (see also p. 100).
- Bullock, E. (1930) Some new records of Coleoptera from Ireland. *Entomologist's Monthly Magazine* **66**: 140-141.
- Chaster, G. W. and Tomlin, B. (1902) Coleoptera from Ballycastle Co. Antrim. *Irish Naturalist* **11**: 61-65.
- Clawson, S. and Anderson, R. (2006) The banded pine weevils *Pissodes pini* (L.) and *P. castaneus* (De Geer) (Coleoptera: Curculionidae) established in Ireland. *Entomologist's Gazette* **57**: 269-270.
- Crawford, W. M. and O'Mahony, E. (1935) On some northern Irish Coleoptera. *Irish*

- Naturalists' Journal* **5**(12): 310-311.
- Crowson, R. A. (1987) Some records of Coleoptera from Dalmeny Park, West Lothian, Scotland. *Entomologist's Monthly Magazine* **123**: 14.
- Duff, A. G. (ed.) (2012) *Checklist of the beetles of the British Isles*. Wells, Somerset (Privately published).
- Foster, A. P. (2011) *Scolytus rugulosus* (Müller) (Scolytidae) new to Ireland. *The Coleopterist* **20**(2): 99.
- Foster, G. N. and Reynolds, J. D. (2008) Rediscovery of *Prionocyphon serricornis* (Müller) (Coleoptera: Scirtidae) in Ireland. *Irish Naturalists' Journal* **29**: 49.
- Fowler, W. W. (1891) *The Coleoptera of the British Islands*. Volume **V**. Reeve, London.
- Gimingham, C. T. (1942) *Tetratoma ancora* (Col., Melandryidae) and other beetles in Ireland. *Entomologist's Monthly Magazine* **78**: 51.
- Good, J. A. (1997) *Gyrophæna angustata* (Stephens) (Coleoptera: Staphylinidae), a beetle new to Ireland associated with *Polyporus squamosus* Huds. ex Fr. (Hymenomycetes: Polyporaceae). *Irish Naturalists' Journal* **25**(11/12): 453.
- Good, J. A. and Anderson, R. (2017) Additions, deletions and corrections to the Staphylinidae in the Irish Coleoptera annotated list, with a revised checklist of Irish species. *Bulletin of the Irish Biogeographical Society* **41**: 178-234.
- Good, J. A. and Butler, F. T. (1995) Woodland polypore fungi and other microhabitats of Staphylinidae (Coleoptera) at Powerscourt Demesne, Co. Wicklow, Ireland. *Bulletin of the Irish biogeographical Society* **18**: 22-29.
- Halbert, J. N. (1893) Coleoptera in Co. Dublin. *Irish Naturalist* **2**: 229.
- Halbert, J. N. (1910a) Notes on new Irish beetles. *Irish Naturalist* **19**: 30-33.
- Halbert, J. N. (1910b) *Cryptophagus bimaculatus*, Panz., and other Coleoptera at Lough Neagh. *Entomologist's Monthly Magazine* **46**: 62-66.
- Halbert, J. N. (1937) Records of Irish Coleoptera. *Entomologist's Monthly Magazine* **73**: 82-87.
- Haliday, A. H. (1841) Notes on Staphylinidae. *Entomologist* **1**: 186-188.
- Haliday, A. H. (1855) [Entomological remarks]. *Natural History Review* **2**: 116-124.
- Haliday, A. H. (1885) Notes on Irish Coleoptera. *Report and Proceedings of the Belfast Naturalists Field Club*. Appendix **8**.
- Hammond, P. M. (1980) Staphylinidae (Coleoptera) in Ireland, 1: Micropeplinae, Proteininae, Omaliinae and Piestinae. *Irish Naturalists' Journal* **20**(4): 133-140.
- Hardy, J. R. (1897) Coleoptera at Rathlin Island. *Irish Naturalist* **6**: 187-188.
- Hickin, N. E. (1952) *Euophryum confine* Broun, the wood-boring weevil, in Ireland. *Entomologist's Monthly Magazine* **88**: 157.
- Hickin, N. E. (1953) Death watch beetle in Ireland. *Entomologist* **86**: 138.

- Irwin, A. G. (1975) Insects from a deserted bat colony in Co Down, including a beetle new to Ireland. *Irish Naturalists' Journal* **18**(7): 226-227.
- Janson, O. E. (1924) Coleoptera at Lough Neagh (Co Antrim) and Newcastle (Co Down). *Irish Naturalist* **33**: 69-72.
- Johnson, C. (1977) A third immigrant species of *Ptinella* Motschulsky (Col., Ptiliidae) new to the British fauna. *Entomologist's Gazette* **28**: 43-44.
- Johnson, C. (1997) Revision of Bullock's Irish Clambidae, with two species new to Ireland. *The Coleopterist* **6**: 53-55.
- Johnson, W. F. (1888a) Coleoptera at Armagh in 1887. *Entomologist's Monthly Magazine* **25**: 193-196.
- Johnson, W. F. (1888b) Coleoptera at Armagh. *Entomologist's Monthly Magazine* **25**: 18.
- Johnson, W. F. (1889) Additions to the list of Irish Coleoptera. *Entomologist's Monthly Magazine* **25**: 285.
- Johnson, W. F. (1891) Notes on the Coleoptera of the north of Ireland. *Entomologist's Monthly Magazine* **27**: 223.
- Johnson, W. F. (1892a) The Coleoptera of the Armagh District. *Irish Naturalist* **1**: 14-18, 36-38, 57-59, 77-78, 97-99, 120-123, 142-144.
- Johnson, W. F. (1892b) Notes on the Coleoptera of the north of Ireland. *Entomologist's Monthly Magazine* **28**: 213-214.
- Johnson, W. F. (1895) Entomological notes from the north of Ireland. *Entomologist's Monthly Magazine* **31**: 33.
- Johnson, W. F. (1896) Entomological notes from Poyntzpass. *Irish Naturalist* **5**: 190.
- Johnson, W. F. (1900) Entomological notes from Ulster. *Irish Naturalist* **9**: 183-184.
- Johnson, W. F. (1906) Coleoptera from Co. Fermanagh. *Irish Naturalist* **15**: 139-142.
- Johnson, W. F. (1909) Entomological notes during 1908. *Irish Naturalist* **16**: 69-72.
- Johnson, W. F. (1912) Entomological notes from Ulster. *Irish Naturalist* **21**: 131-133.
- Johnson, W. F. (1914) Coleoptera collected by the late H. L. Orr. *Irish Naturalist* **23**: 14-16.
- Johnson, W. F. and Halbert, J. N. (1902) A list of the beetles of Ireland. *Proceedings of the Royal Irish Academy* (Ser. 3) **6**: 535-827.
- Klimaszewski, J., Pelletier, G., Germain, C., Hébert, C. and Humble, L. M. (2001) Diversity of *Placusa* (Coleoptera: Staphylinidae, Aleocharinae) in Canada, with descriptions of two new species. *The Canadian Entomologist* **133**(1): 1-47.
- Langham, C. (1897) Coleoptera taken at Tempo, Enniskillen. *Irish Naturalist* **6**: 57.
- Lott, D. A. (2010) A new species of *Quedius* subgenus *Microsaurus* Dejean (Coleoptera: Staphylinidae) from Scotland and Ireland. *The Coleopterist* **19**: 135-141.
- McClenaghan, I. (1987) Some not-so-recent Irish records of *Euophryum confine* (Broun) (Col.,

- Curculionidae). *Entomologist's Monthly Magazine* **123**: 178.
- Maddison, D. R. and Anderson, R. (2016) Hidden species within the genus *Ocys* Stephens: the widespread species *O. harpaloides* (Audinet-Serville) and *O. tachysoides* (Antoine) (Coleoptera, Carabidae, Bembidiini). *Deutsche Entomologische Zeitschrift* **63**(2): 287-301.
- Mendel, H. (2004) *Melanotus villosus* (Geoffroy in Fourcroy, 1785) and *Melanotus castanipes* (Paykull, 1800) (Elateridae) in Britain. *The Coleopterist* **13**(4): 121-124.
- Morris, M. G. (1993) A critical review of the weevils (Coleoptera, Curculionoidea) of Ireland and their distribution. *Proceedings of the Royal Irish Academy* **93B**: 69-84.
- Morris, M. G. (1997) New records of Irish weevils (Insecta, Coleoptera, Curculionoidea). *Bulletin of the Irish Biogeographical Society* **20**: 155-178.
- Nash, R. (1989) The musk beetle *Aromia moschata* (L.) (Coleoptera: Cerambycidae) in Co Down. *Irish Naturalists' Journal* **23**(4): 153.
- Nash, R. and Anderson, R. (2007) *Korynetes caeruleus* (DeGeer) (Coleoptera: Cleridae) and *Gibbium psylloides* (Czempinski) (Coleoptera: Ptinidae), beetles new to Ireland. *Irish Naturalists' Journal* **28**: 418-419.
- Nash, R., Anderson, R. and O'Connor, J. P. (1997) Recent additions to the list of Irish Coleoptera. *Irish Naturalists' Journal* **25**(9): 319-325.
- O'Connor, J. P. (1981) Notes on insect pests received for identification by the National Museum of Ireland. *Bulletin of the Irish Biogeographical Society* **5**: 5-14.
- O'Connor, J. P. and Nash, R. (1981) Notes on five species of insect (Hemiptera: Coleoptera) imported into Ireland. *Irish Naturalists' Journal* **20**(7): 299-300.
- O'Connor, J. P., Nash, R. and Anderson, R. (1983) Insects imported into Ireland 4. Records of Dictyoptera, Hemiptera, and Coleoptera (including *Pycnomerus fuliginosus* Erichson). *Irish Naturalists' Journal* **21**(2): 81-83.
- O'Connor, J. P., Winter, T. G. and Good, J. A. (1991) A review of the Irish Scolytidae (Insecta: Coleoptera). *Irish Naturalists' Journal* **23**(10): 403-408.
- O'Farrell, A. F. and Butler, P. M. (1948) Insects and mites associated with the storage and manufacture of foodstuffs in Northern Ireland. *Economic Proceedings of the Royal Dublin Society* **3**: 343-407.
- O'Mahony, E. (1929) Report on recent additions to the Irish fauna and flora. Coleoptera. *Proceedings of the Royal Irish Academy* **39B**: 29-36.
- O'Mahony, E. (1934) New Irish Coleoptera with a description of a new aberration. *Entomologist's Monthly Magazine* **70**: 199.
- O'Mahony, E. (1935a) A new Irish beetle, *Malthodes guttifer* Kies. *Entomologist's Monthly Magazine* **71**: 111.
- O'Mahony, E. (1935b) New, rare and local Irish Coleoptera. *Entomologist's Monthly Magazine*

71: 236.

- O'Mahony, E. (1938) A note on Irish Coleoptera. *Entomologist's Monthly Magazine* **74**: 190-191.
- O'Mahony, E. (1940) Some Irish Coleoptera records. *Entomologist's Monthly Magazine* **76**: 180.
- O'Mahony, E. (1941) *Hallomenus binotatus* Quen. (Col., Melandryidae) in Ireland. *Entomologist's Monthly Magazine* **77**: 171.
- Patterson, R. (1885) A list of Irish Coleoptera collected mainly by the late Robert Patterson in the year 1829. *Belfast Naturalist's Field Club Proceedings, Appendix* **1884-85**: 317-326.
- Pearce, E. J. (1957) Coleoptera (Pselaphidae). *Handbooks for the Identification of British Insects* **4(9)**: 1-32. Royal Entomological Society of London.
- Porter, E. (1898) Coleoptera of Upper Lough Erne, Co Fermanagh. *Irish Naturalist* **7**: 48-49.
- Quirke, D. A. (1943) *Eccoptogaster scolytus* F. (Col., Ipidae) in Ireland. *Entomologist's Monthly Magazine* **79**: 198.
- Spaans, F., McClure, A. and Anderson, R. (in press) *Piyogenes trepanatus* new to Ireland and records of *Polygraphus poligraphus* (Coleoptera; Scolytinae). *Irish Naturalists' Journal*.
- Speight, M. C. D. (1985) Sycamore: a host for *Ischnomera sanguinicollis* (Coleoptera: Oedemeridae) and *Melanotus erythropterus* (Coleoptera: Elateridae) in Co Wicklow. *Irish Naturalists' Journal* **21**(11): 488-490.
- Speight, M. C. D. (1988) The Irish Cerambycid fauna (Coleoptera: Cerambycidae). *Bulletin of the Irish Biogeographical Society* **11**: 41-58.
- Speight, M. C. D. (1989) Some Irish records of the genera *Glischrochilus* and *Soronia* (Coleoptera: Nitidulidae). *Bulletin of the Irish Biogeographical Society* **12**: 18-21
- Stelfox, A. W. (1952) *Dacne bipustulata* Thunberg: a new Irish beetle. *Irish Naturalists' Journal* **10**: 300.
- Stelfox, A. W. (1959) Review. Beetles of the British Isles, by E. F. Linssen. *Irish Naturalists' Journal* **13**(3): 79-80.
- Stüben, P. E., Clarke, J. J. R., Anderson, R. and Rosell, S. (2024) *Xenosacalles* gen.n. *irlandikos* sp.n. (Coleoptera: Curculionidae: Cryptorhynchinae) – Cuius es? *Weevil News* **113**: 1-13.
- Walker, J. J. (1895) Captures of Coleoptera during the Spring of 1895. *Irish Naturalist* **4**: 207-212, 289-291.
- Welch, R. C. (1986) *Coleoptera from Northern Ireland recorded during the Forest Entomology Group Meeting, 30 June-4 July 1986*. Institute of Terrestrial Ecology, Monks Wood.

Appendix 1. Recorders and list of abbreviations.

The following are the abbreviations used for recorders in the species accounts AC Alastair Cameron; AFO A.F. O'Farrell; AGI A.G. Irwin; AHH A.H. Haliday; AM Adam Mantell; APF A.P. Foster; ARF A.R. Furlong; ARH A.R. Hogan; AWS A.W. Stelfox; BN B. Nelson; BT B. Tomlin; CAMR C.A.M. Reid; CJ C. Johnson; CTG C.T. Gimingham; CWB C.W. Buckle; DAL D.A. Lot; DN D. Nelson; EFB E.F. Bullock; EO E. O'Mahony; FS Florentine Spaans; GCC G.C. Champion; GHC G.H. Carpenter; GMO G.M. Orledge; GNF G.N. Foster; GWC G.W. Chaster; GWN G.W. Nicholson; IM I. McClenaghan; JC Joshua Clarke; JAG J.A. Good; JAO J.A. Owen; JAP J.A. Power; JJW J.J. Walker; JMB J.M. Browne; JNH J.N. Halbert; JPOC J.P. O'Connor; JRH J.R. Hardy; KAB K.A. Bryan; KNAA K.N.A. Alexander; MC M. Cawley; MCDS M.C.D. Speight; MDB M.D. Bryan; MGM M.G. Morris; MGT M.G. Telfer; MM M. Meharg; NMI National Museum of Ireland; OEJ O.E. Janson; PJH P.J. Hodge RA R. Anderson; RCF R.C. Faris; RCW R.C. Welch; RG R. Gamsa; RM R. Martin; RN R. Nash; SC S. Clawson; SM S. McCormack; SR Stewart Rosell; TD Tom Delaney; TG T. Gittings; TVW T.V. Wollaston; UM Ulster Museum; WES W.E. Sharp.



PLATE 1. Left: *Endomychus coccineus* with larvae, Dixon Park, Belfast, Co. Antrim. Right: *Ocys tachysoides*, Belvoir Park, Belfast, Co. Down. Photographs: R. Anderson.



PLATE 2. Left: *Sinodendron cylindricum*, Portmore Lough, Co Antrim. Right: *Malthodes marginatus*, on *Pinus*, Leitrim Lodge, Mourne, Co. Down. Photographs: R. Anderson.



PLATE 3. Left: *Pycnomerus angulatus*, Mount Stewart, Co. Down. Right: *Gonodera luperus*, Ballymaclary NR, Magilligan, Co. Londonderry. Photographs: R. Anderson.



PLATE 4. Left: *Stictoleptura rubra*, garden, Terenure, Dublin City. Right: *Rhopalomesites tardyi*, Belfast Castle, Co. Antrim. Photographs: R. Anderson.

NEW RECORDS OF IRISH SPONGE FLIES (NEUROPTERA: SISYRIDAE)

J. P. O'Connor and M. A. O'Connor

c/o National Museum of Ireland – Natural History, Merrion Street, Dublin 2, Ireland.

e-mail: <joconnor@museum.ie>

Abstract

Three species of sponge fly (Neuroptera: Sisyridae) occur in Ireland viz. *Sisyra dalii* McLachlan, 1866, *S. nigra* (Retzius, 1783) and *S. terminalis* Curtis, 1854. New records are provided for each species and their known distributions reviewed.

Key words: Neuroptera, Sisyridae, *Sisyra*, sponge flies, Ireland, distributions.

Introduction

Sponge flies, also known as spongilla-flies (Neuroptera: Sisyridae), are specialist predators of freshwater sponges of which five species are recorded from Ireland viz. *Ephydatia fluviatilis* (L. 1759), *E. muelleri* (Lieberkühn 1855), *Eunapius fragilis* (Leidy 1851), *Rackiella ryderi* (Potts 1882) and *Spongilla lacustris* (L. 1759) (Lucey and Cocchiglia, 2014). The sisyrids are the only true aquatic insects in the order Neuroptera. The adults resemble small brown lacewings (Hemerobiidae) (Plate 1). The female lays her eggs on vegetation overhanging water. The larvae hatch and drop into the water where they seek out sponges to feed on. Unlike the sponge feeding caddisflies, the larvae do not ingest whole particles. The mouth parts are modified into two elongated tubes which are used to pierce the sponge and suck the fluids within (Fig. 1). They have also been reported to suck fluids from bryozoans and algae (Resh, 2012; Singleton, 2018). Given the requirement of freshwater sponges for good water quality, sisyrids are generally localised in their distribution and can be used as indicators of clean rivers (McCulloch and Crowley, 2024). Three species have been recorded from the British Isles. The adults may be identified using Elliott (1996), Plant (1997) and Plant *et al.* (2024). There is no complete key to larvae because of the lack of specimens (Elliott, 1996).

While collecting Irish caddisflies (Trichoptera), the authors took the opportunity to record any sponge flies that they encountered. These records are presented here, along with specimens sent to the senior author, and are indicated by an asterisk*. New counties are similarly indicated. The opportunity is also taken to review all the other existing Irish distributional data. The new material was identified by the senior author using Elliott (1996) and Plant (1997).

Sisyra dalii McLachlan, 1866 (Fig. 2)

First described from Britain (McLachlan, 1866), *Sisyra dalii* is a Nationally Notable species there (NBN, 2024a). It is only known from four counties in Ireland. Outside the British Isles, it

has been found in Czechia, Denmark, France, Germany, Hungary, Netherlands, Norway, Portugal, Spain, Sweden and the Netherlands (Jepson, 2024). The flight period is May-August and adults have been found chiefly near large rivers (Elliott, 1996).

Records

DUBLIN: River Tolka at Glasnevin (O1437) (King and Halbert, 1910) [given as O1438 in dataset 64 of the National Biodiversity Data Centre (Irish Biogeographical Society, 2018)].

GALWAY: Inverin (M0822), August 1926, coll. and det. M. E. Mosely (Mosely, 1930 as *S. dalei*; Plant, 1994; NBN, 2024a) (grid reference given as (M02) in Plant and NBN).

KERRY: Dinish, Killarney (V9385); Ross Castle, Killarney (V9688). Ross Castle is V9788 but it is more likely that the species was taken on the nearby Bunrower River (V9688) (King and Halbert, 1910); Killarney (V99) (V9490 is used on the map below), 31 July 1887, J. J. F. X. King (the collector is mistakenly given as F. J. Killington), det. F. J. Killington (Plant, 1994; NBN, 2024a).

WEXFORD: Edenvale (T0427) (see note below) (Plate 2); *River Slaney, Enniscorthy (S9739), 1♂ 27 July 2015, J. P. O'Connor and M. A. O'Connor.

The grid reference (T051213) for Edenvale given in dataset 64 of the National Biodiversity Centre (Irish Biogeographical Society, 2018) is erroneous. The site is further north and deserves a description. Edenvale is a forested area that is situated 1km outside of Castlebridge and the area is popular as it has a walking path that runs alongside the River Sow leading to an impressive waterfall. A tributary of the River Slaney, the Sow drains an isolated catchment area of 88 square kilometres and at Edenvale has cut out a narrow valley with steep sides. There are two accessible tributary streams along the path, both flowing into the Sow which has a pH of 6.9-7.8. Eden Vale House once stood near the waterfall and J. J. F. X. King may have stayed there when he visited the area in 1902.

***Sisyrn nigr* (Retzius, 1783) (Fig. 3)**

synonym *Sisyrn fuscata* (Fabricius, 1793)

Sisyrn nigr is found in Europe and Northern Asia (excluding China) and North America (NBN, 2024b). The flight period is from May to October (Plant, 1994). Larvae are found both on and inside sponges and bryozoans inhabiting ponds, lakes, canals, rivers and streams. Adults have also been found near an Irish turlough and in a marsh. The adults are usually found on the vegetation by the water and are easily taken in a sweep-net or a light-trap. The life cycle takes one year or less. Larvae leave the water in the autumn, overwinter in the prepupal stage, pupate in April-June with the adults emerging in May-June. They feed on insects and mites along with honeydew containing *inter alia* pollen grains, fungal spores and algae. Adults are usually found near the banks of the water bodies. The usual larval hosts are *Spongilla lacustris* and *Ephydatia fluviatilis*. Further information on the species will be found in Elliott (1996). *Gyrinophagus aper* (Walker) (Hymenoptera: Pteromalidae), a parasitoid of *S. nigr* has been found at Corofin,

Co. Clare (Thuróczy and O'Connor, 2006).

Records

ANTRIM: Belfast (J37) (Barnard, O'Connor, and Speight, 1991) (J3472 has been used for the purpose of mapping); Greenmount Campus (J1584), adult 5 September, light-trap, Rodney Monteith, det. Rodney Monteith; Springfarm (J1488), adult 10 August 2022, light-trap, Rodney Monteith, det. Rodney Monteith (NBN, 2024b).

ARMAGH: Loughall (H9051) (King and Halbert, 1910).

***CARLOW:** *Bahana Woods, River Barrow (S7239), 1♂ 14 June 1991, J. P. O'Connor and M. A. O'Connor.

***CAVAN:** *Lady's Lake, Dun an Ri Forest Park (N7897), 3♂♂1♀ 7 August 2022, J. P. O'Connor and M. A. O'Connor; *Lough Ramor, Virginia (N6087), 1♂ 12 August 2020, J. P. O'Connor and M. A. O'Connor; *Lough Ramor, Lakeside Manor (N6286), 2♂♂ 12 August 2020, J. P. O'Connor and M. A. O'Connor.

CLARE: Dromore (R3487) (Barnard, O'Connor and Speight, 1991); *River Fergus, Addron Bridge (R3587), 1♀ 25 May 2023, Hugh Feeley.

DONEGAL: Clonkillybeg (C1219) (King and Halbert, 1910); Glenbeagh (B9918) [Owenbeagh R.] (King and Halbert, 1910); Keel Lough (C1524) (King and Halbert, 1910); *Lough Eske (G9683), 2♂♂ 6-7 June 2018, light traps, J. P. O'Connor and M. A. O'Connor; *Lough Eske (G9684), 2♀♀ 7 June 2018, J. P. O'Connor and M. A. O'Connor; *River Clady, near Spoule's Lough (C1018) (King and Halbert, 1910).

***DOWN:** *Castlewellan Lake (J3336), ♂♂♀♀ 18-19 June 2017, J. P. O'Connor and M. A. O'Connor; *Tullynagee (J4763), small lake, 1♂ 18-19 June 2017, light-trap, J. P. O'Connor and M. A. O'Connor.

DUBLIN: *pond, Áras an Uachtaráin, Phoenix Park (O1235), 1♂2♀♀ 2020, Simon Hodge; *Glen Pond, Phoenix Park (O0935), 2♂♂2♀♀ 22 July 2018, J. P. O'Connor and M. A. O'Connor; Gollierstown (O0132) (Barnard, O'Connor and O'Connor, 1987); Lucan [River Liffey] (O0135) (King and Halbert, 1910); *River Liffey, Lucan Demense (O0235), ♂♂♀♀ 15 July 2018, J. P. O'Connor and M. A. O'Connor; *River Liffey, Strawberry Beds (O0735), 1♀ 30 July 2018, J. P. O'Connor; *Quarry Lake, Phoenix Park (O1036), 1♀ 23 July 2018, J. P. O'Connor; *Zoological Gardens (O1235), 1♀ 1-25 July 2019, Rothamsted Insect Survey light-trap, per A. Riley.

***FERMANAGH:** *Mill Lough (H2438), 2♂♂ 5-6 June 2018, light-trap, J. P. O'Connor and M. A. O'Connor.

GALWAY: Doorosbeg pier, Lough Derg (R7894); Muingahunna, Portumna (M8303); turlough near Killinny (M4103) (all Barnard, O'Connor, and Speight, 1991).

KERRY: *Doolough, Muckross Peninsula (V9585), 4♂♂3♀♀ 5-14 September 1993 and 20♂♂20♀♀ 26 July-5 August 1993, Malaise traps in old *Betula/Quercus* woods and swamp

Alnus/Salix strip at the edge of the lake, M C. D. Speight; Gap of Dunloe (V8787) (King and Halbert, 1910); Killarney (V99), 1923 (NBN, 2024b) (V9490 is used on the map below); Lough Allua (W1765), 8 September 1989, P. Kirby and S. J. Lambert, det. P. Kirby (NBN, 2024b); Middle Lake, Killarney (V960846) (Barnard, O'Connor and O'Connor, 1987); Muckcross (V9586), 5 September 1989, P. Kirby and S. J. Lambert, det. P. Kirby (NBN, 2024b); O'Sullivan's Cascade, Killarney (V9188); River Laune Exit, Lower Lake, Killarney (V8991) (both Barnard, O'Connor and Speight, 1991); Ross Castle (V9688) (King and Halbert, 1910).

LAOIS: Grantstown (S3380); Wheelahan's Bridge (N5911); Woodbrook (N517092) (all Barnard, O'Connor, and Speight, 1991).

LEITRIM: Dromod (N0489) (Barnard, O'Connor, and Speight, 1991).

LONGFORD: Newtown Forbes (N0882) (Barnard, O'Connor, and Speight, 1991).

MAYO: Achill Island (F6903) (Halbert, 1912); Belclare (L9781) (Halbert, 1912) (Carrowbeg River (L9295) (King and Halbert, 1910); Kip Lough (M0880) (King and Halbert, 1910); Prospect Lough (L9581) (King and Halbert, 1910); Westport (L9984) (Halbert, 1912).

MEATH: near Oldbridge (O044761) in 1986 (Barnard, O'Connor, and Speight, 1991).

MONAGHAN: Emyvale (H6843) (King and Halbert, 1910); Glaslough (H7241) (King and Halbert, 1910).

***OFFALY:** *Loch an Dochais, Boora Park (N1819), 2♂♂ 26 June 2018 and 1♀ 25 July 2018, J. P. O'Connor and M. A. O'Connor; *Lough Boora (N1818), 1♂1♀ 25 July 2018 (Plate 2); *Upper Finnamore Lake, Boora Park (N2120), 1♂ 26 June 2018, J. P. O'Connor and M. A. O'Connor.

***TIPPERARY:** *Hatchery, Kilmastulla River (R6867), 2♂♂ 3 August 1976, M. A. O'Connor;

*River Suir, Clonmel (S2122), 1♀ 11 August 2019, J. P. O'Connor and M. A. O'Connor.

WATERFORD: Ballymacaw Cove (X648991) (Barnard, O'Connor, and Speight, 1991). Given as Dallymacaw Cove in NBN (2024b).

***WESTMEATH:** *Lough Ennell, Inchacrone, Tudenham (N4146), 1♂ 9 July 1997, J. P. O'Connor.

WEXFORD: *Curraclloe (T1128), 1♀ 5 August 2019, marsh, J. P. O'Connor; Killurin (S9726) [R. Slaney] (King and Halbert, 1910); *Lower Lake, Johnstown Castle (T0216), 1♂ 8 August 2019, J. P. O'Connor and M. A. O'Connor; Mount Garrett Wood (S720305) (Barnard, O'Connor and O'Connor, 1987); *River Slaney, Enniscorthy (S9739), 1♀ 6 August 2019, J. P. O'Connor and M. A. O'Connor.

***Sisyr terminalis* Curtis, 1854 (Fig. 4)**

First described from Ireland by Curtis (1854) who stated that he discovered the species “at the base of Turk Mountain, near the Lakes of Killarney, in a tour of the west of Ireland made in 1835 with my friend Mr. Haliday. The specimens were beaten out of an oak tree the 9th of July”. *Sisyr terminalis* is a Nationally Notable species in Britain (NBN, 2024c). It is only known

from six counties in Ireland. Outside the British Isles, it has been found in Austria, Belgium, Bulgaria, Croatia, Czechia, Denmark, Estonia, Finland, France, Germany, Hungary, Italy, Luxembourg, Poland, Romania, Russian Federation, Slovakia, Sweden, Switzerland and the Netherlands (GBIF, 2024; Jepsen, 2024). The flight period is June to August (Plant, 1994). Adults occur near fast flowing rivers, canals and lakes (Elliott, 1996). In Britain, *S. terminalis* is rarer than *S. dalii*. The reverse appears to be the situation in Ireland. The genome sequence is given by McCulloch and Crowley (2024).

***CARLOW:** *River Barrow, St Mullins (S7237), 1♂1♀ 10 August 2018, J. P. O'Connor and M. A. O'Connor.

CORK: Fota Wildlife Park (W781813), 1989, light, R. Peny, det. C. W. Plant (NBN, 2024c; Plant, 1994).

DUBLIN: Lucan [River Liffey] (O0135) 21 August 1894 (King and Halbert, 1910); *River Liffey, Islandbridge (O1134), ♀24 July 2022, J. P. O'Connor and M. A. O'Connor; *River Liffey, Lucan Demense (O0235), 1♀ 18 July 2018, J. P. O'Connor and M. A. O'Connor (Plate 3); *River Liffey, Strawberry Beds (O0735), ♀ 30 June 2018, J. P. O'Connor.

KERRY: Cloghereen, Killarney (V9886); Deenagh, Killarney (V9490); Ross Castle, Killarney (V9488) (King and Halbert, 1910); Gortadirra, Muckross, Killarney (V9088), 16 August 1978, M. de Courcy Williams, det. J. P. O'Connor (Plant, 1994; NBN, 2024c); at the base of Turk [Torc] Mountain [The Owengarriff River and Torc Falls] (V9684), 1835, John Curtis (Curtis, 1854).

***KILDARE:** *River Liffey, Castletown Estate, Celbridge (N9733), 1♀ 30 June 2019 and 1♀ 7 July 2019, J. P. O'Connor and M. A. O'Connor.

***WEXFORD:** *River Slaney, Enniscorthy (S9739), 1♀ 6 August 2019, J. P. O'Connor and M. A. O'Connor (Plate 4).

Acknowledgements

The authors are very grateful to Colin Plant for reviewing the original manuscript and for his helpful comments on it. We also wish to thank Hugh Feeley, Simon Hodge and Adrian Riley (Rothamsted Insect Survey) for supplying specimens, and Alan Morton for supplying the relevant software programme used for preparing the Irish distribution maps with DMAP.

References

- Barnard, P. C., O'Connor, J. P. and O'Connor, M. A. (1987) Some records of Irish Neuroptera (Insecta). *Bulletin of the Irish Biogeographical Society* **10**: 72-80.
- Barnard, P. C., O'Connor, J. P. and Speight, M. C. D. (1991) A review of published distribution data for Irish Neuroptera (Insecta), together with additional records and a check-list of the Irish species. *Bulletin of the Irish Biogeographical Society* **14**: 109-123.

- Curtis, J. (1854) Descriptions of two species of the genus *Hemerobius* of Linnaeus, new to this country, with remarks on the nomenclature of *Coniopteryx*, and on *Orthotaenia*, *Buoliana*, &c. *Transactions of the [Royal] Entomological Society of London* **8**[(N.S.) **3**]: 56-60.
- GBIF (2024) *Sisyra terminalis* Curtis, 1854
<<https://www.gbif.org/species/2097056>> (accessed via GBIF 19 November 2024)
- Halbert, J. N. (1912) Clare Island Survey. 27. Neuroptera. *Proceedings of the Royal Irish Academy* **31**(27): 4pp.
- Irish Biogeographical Society (2018) Lacewings (Neuroptera) of Ireland, National Biodiversity Data Centre, Ireland. (accessed 10 November 2024).
<<https://maps.biodiversityireland.ie/Dataset/64>>
- Jepson, J. E. (2024) Neuropterida of Ireland. Lacewing Digital Library, Research Publication No. 6. <<https://lacewing.tamu.edu/Ireland/Main>>. Last accessed (22 November 2024).
- King, J. J. F. X. and Halbert, J. N. (1910) A list of the Neuroptera of Ireland. *Proceedings of the Royal Irish Academy* **28B**: 29-112.
- Lucey, J. and Cocchiglia, L. (2014) Distribution of sponges (Porifera: Spongillidae) in southern Irish rivers and streams. *Biology and Environment: Proceedings of the Royal Irish Academy* **114B**: 89-100.
- McCulloch, J. and Crowley, L. M. (2024) The genome sequence of a spongefly, *Sisyra terminalis* (Curtis, 1854) Wellcome Open Research February 2024:49
<DOI:10.12688/wellcomeopenres.20630.1>
- McLachlan, R. (1866) Notes on three little-known species of British Hemerobidae. *Entomologist's Monthly Magazine* **2**: 268-270.
- Mosely, M. E. (1930) Irish Trichoptera, Neuroptera, etc. *Entomologist* **63**: 30-34.
- NBN (2024a) *Sisyra dalii* map on the NBN Atlas:
<<https://species.nbnatlas.org/species/NHMSYS0000869749>> The National Biodiversity Network (NBN) Atlas (accessed 18 November 2024).
- NBN (2024b) *Sisyra nigra* map on the NBN Atlas:
<<https://species.nbnatlas.org/species/lcid:NHMSYS00207849199>> The National Biodiversity Network (NBN) Atlas (accessed 18 November 2024).
- NBN (2024c) *Sisyra terminalis* map on the NBN Atlas:
<<https://species.nbnatlas.org/species/NHMSYS0000869751>> The National Biodiversity Network (NBN) Atlas (accessed 18 November 2024).
- O'Connor, J. P., O'Connor, M. A. and Gammell, M. P. (2019) The caddisfly *Hydropsyche fulvipes* (Curtis, 1834) (Trichoptera: Hydropsychidae): finally confirmed as an Irish species. *Entomologist's Record and Journal of Variation* **131**: 26-31.
- Plant, C., Jepson, J. E., Price, B. and Garland, S. (2024) Sisyridae (Spongeflies) Identification. Lacewing and Allies Recording Scheme.

<<https://www.laars.jamesjepson.com/sisyridae-spongeflies/>> (Accessed 19 November 2024)

- Plant, C. W. (1994) *Provisional atlas of the lacewings and allied insects (Neuroptera, Megaloptera, Raphidioptera and Mecoptera) of Britain and Ireland*. NERC Institute of Terrestrial Ecology, Monks Wood. 208pp.
- Plant, C. W. (1997) A key to the adults of the British lacewings and their allies (Neuroptera, Megaloptera, Raphidioptera and Mecoptera). *Field Studies* **9**: 179-269.
- Resh, V. H. (2012) Life cycles of invertebrate predators of freshwater sponge. Pp 299-314. In Harrison, F. (ed.) *Aspects of sponge biology*. Academic Press.
- Thuróczy, C. and O'Connor, J. P. (2006) Notes on the Irish Pteromalidae (Hymenoptera): *Dinotiscus* Ghesquière, *Gyrinophagus* Ruschka, *Peridesmia* Förster, *Spaniopus* Walker and *Trichomalus* Thomson. *Irish Naturalists' Journal* **28**: 243-245.
- Weibmair, W. (1999) Präimaginale stadien, biologie und ethologie der europäischen Sisyridae (Neuropterida: Neuroptera). *Stapfia* **60**, zugleich *Kataloge des OÖ. Landesmuseums, Neue Folge* **Nr. 138**(1999): 101-128.

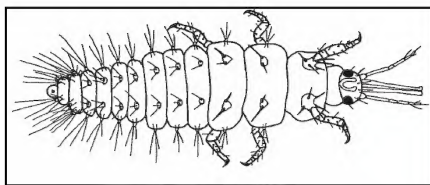


FIGURE 1. Larva of *Sisyra dalii*, dorsal view (from Weibmair, 1999).



PLATE 1. *Sisyra nigra*, adult, Áras an Uachtaráin, Phoenix Park, Dublin City, 2020. Photograph: Simon Hodge.

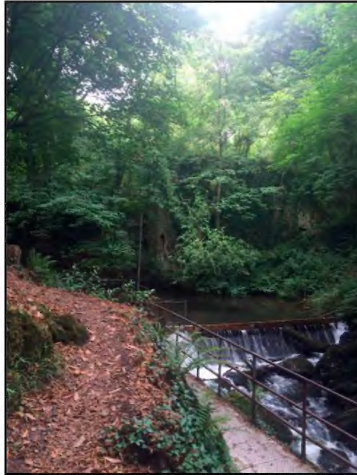


PLATE 2. A site for *Sisyr daliai*, River Sow, Edenvale, Co. Wexford, 14 August 2018, Photograph: M. A. O'Connor.



PLATE 3. Left: a site for *Sisyr nigra*, Lough Boora, Co. Offaly, 25 July 2018. Photograph: M. A. O'Connor, Right: a site for *Sisyr terminalis*, River Liffey, Lucan Demense, Co. Dublin, 18 July 2018. Photograph: J. P. O'Connor.

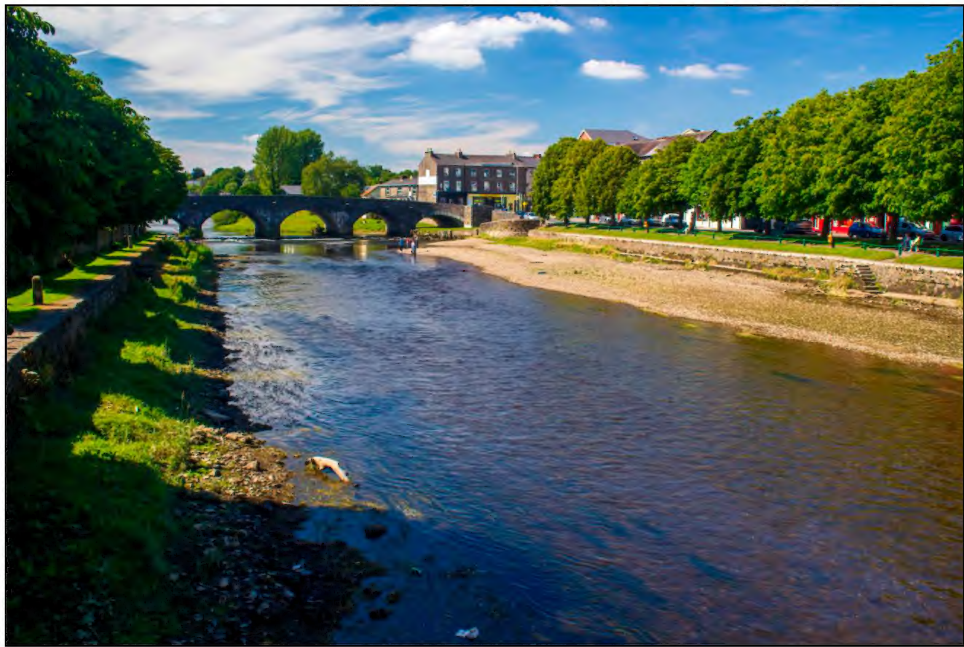
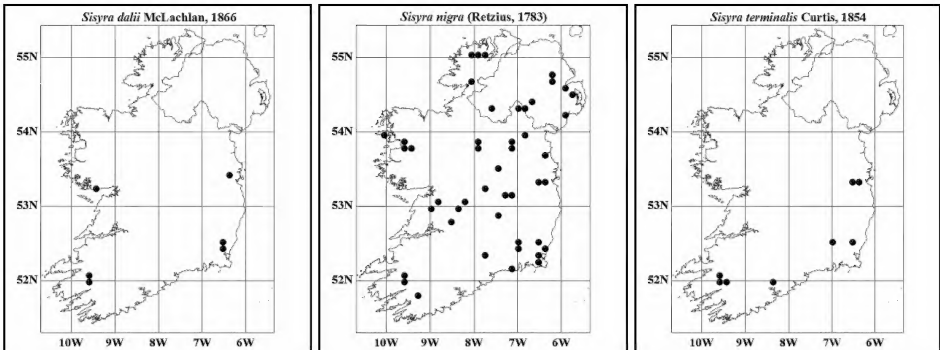


PLATE 4. A site for all three Irish species, tidal stretch of the River Slaney, below Enniscorthy, Co. Wexford. Photograph: Andrew (Adobe) (licenced).



FIGURES 2-4. The known Irish distributions of *Sisyra dalii* McLachlan, 1866, *Sisyra nigra* (Retzius, 1783) and *Sisyra terminalis* Curtis, 1854.

A CHECKLIST OF THE BUTTERFLIES AND MOTHS (LEPIDOPTERA) OF COUNTY WATERFORD

Anthony Bryant

Priest's Road, Tramore, Co. Waterford, Ireland.

e-mail: <tony_bryant_tramore@yahoo.co.uk>

Abstract

A checklist of the Lepidoptera of County Waterford, in the south of Ireland, records 1,029 species from the area. A total of 56 species are removed from the county checklist and brief explanations are given for their removal.

Key words: Lepidoptera, butterflies, moths, checklist, Ireland, Waterford.

Introduction

Waterford, situated on the south coast, is one of the smallest Irish counties with an area of 1,862km² (Fig. 1). There are two mountain ranges (the Knockmealdowns and the Comeraghs), It has many rivers, including Ireland's third-longest river, the River Suir (184km); and the fourth-longest river, the Munster Blackwater (168km). There are also scattered lakes, marshes and bogs. Most of the coast consists of cliffs but there are over 30 beaches along the volcanic coastline (McGrath, 2001, 2011).

The first list of the Lepidoptera of Co. Waterford was compiled and published by O'Meara (2001) in which he collated many of the records from past and present recorders (E. S. A. Baynes, K. G. M. Bond, E. C. Pelham-Clinton, R. P. Demuth, A. Maitland Emmet, Canon W. W. Flemyng, H. G. Heal, W. F. de Vismes Kane, J. R. Langmaid, R. M. Mere, Dr H. Murray, Baron C. G. M. de Worms, L. H. Bonaparte Wyse, and others) that "appeared in a number of published works intermittently throughout the years." He particularly drew on Baynes (1964), Beirne (1941), Donovan (1936) and Kane (1884, 1901). He also referred to the series *The Moths and Butterflies of Great Britain and Ireland* (MBGBI) and the Murray collection housed at Trinity College, Dublin (O'Meara, 2001). In compiling the present checklist, besides the forementioned works, other sources included records by the author and others published in the annual Microlepidoptera review in *The Entomologist's Record and Journal of Variation*, *Irish Naturalists' Journal* and *Atropos*. Also consulted were Butterfly Conservation UK (BCUK) Micro-Moth Distribution Maps, National Biodiversity Data Centre (NBDC) Biodiversity Maps and MothsIreland Mapping Ireland's Moths. It should be added the maps on both the latter websites are biased towards Tramore and its environs where the author recorded 930 species of butterfly and moth within a 6km radius of the town.

The publication of O'Meara, (2001) listed 606 species of butterfly and moth for the county, since then many new ones have been recorded and historical ones have come to light, e.g. K. G.

M. Bond found several species in the J. J. F. X. King collection, Hunterian Museum, Glasgow. Unfortunately, some records in O'Meara (2001) should be removed owing to uncertainty as to precise locations, misidentifications or subsequent taxonomic changes. Thus, with its additions, deletions, and corrections the revised and extended checklist comprises 1,029 butterflies and moths out of an Irish fauna of 1,593 species. These additions are indicated with a plus sign either after the authority or vernacular name.

Although Co. Waterford has had both professional and amateur lepidopterists recording species throughout the county for over 150 years their activities were somewhat fleeting, and the county's fauna remained relatively unknown until recent times, when, for example K. G. M. Bond started systematically recording here adding numerous records in the process.

The records to be removed apply to, but not solely, Murray, who was the preeminent lepidopterist of his day in Counties Tipperary and Waterford and who collected from the 1910's to the 1940's mostly, but not exclusively around Clonmel which straddles the River Suir which forms the border between the two counties. Regrettably, living so close to the border it is unclear to which county several of his records belong. It is acknowledged that these records by Murray from "Clonmel" come from within a 15-mile (24km) radius of the town (Beirne, 1941). Due to their ambiguity some are broadly mapped by the NBDC with the hectad and site name of "S22 Clonmel general area" (see <<https://maps.biodiversityireland.ie/Map>>) which spans both counties. O'Meara (2001) lists additional records by Murray also from hectad "S22" which are currently unmapped by the NBDC and MothsIreland, but may be similarly treated in future. These and other records to be removed from the county checklist, totalling 56 in all, are listed in the appendix with a brief explanation for their removal.

CHECKLIST OF THE BUTTERFLIES AND MOTHS (LEPIDOPTERA) OF COUNTY WATERFORD

The systematic order, nomenclature and numbering system of the checklist follows Agassiz *et al.* (2024), abbreviated to ABH, with the species listed under each family. Common names are given for all butterflies, macromoths and the micromoths that have widely recognised common names. Lately some authors have used the proposed new vernacular names for micromoths (Wheeler, 2017), as these have yet to gain widespread acceptance, they have not been used here. *RE = Regionally Extinct (see Allen *et al.*, 2016). ** (see van Nieukerken *et al.*, 2012).

MICROPTERIGIDAE

- 1.003 *Micropterix aureatella* (Scopoli, 1763) +
- 1.004 *Micropterix aruncella* (Scopoli, 1763)
- 1.005 *Micropterix calthella* (Linnaeus, 1761)

ERIOCRANIIDAE

- 2.001 *Dyseriocrania subpurpurella* (Haworth, 1828) +
- 2.002 *Paracrania chrysolepidella* (Zeller, 1851) +
- 2.003 *Eriocrania unimaculella* (Zetterstedt, 1839) +
- 2.004 *Eriocrania sparrmannella* (Bosc, 1791) +
- 2.005 *Eriocrania salopiella* (Stainton, 1854) +
- 2.006 *Eriocrania cicatricella* (Zetterstedt, 1839) +
- 2.007 *Eriocrania semipurpurella* (Stephens, 1835) +
- 2.008 *Eriocrania sangii* (Wood, 1891)

HEPIALIDAE

- 3.002 *Korscheltellus lupulina* (Linnaeus, 1758) Common Swift
- 3.003 *Korscheltellus fusconebulosa* (DeGeer, 1778) Map-winged Swift
- 3.004 *Phymatopus hecta* (Linnaeus, 1758) Gold Swift
- 3.005 *Hepialus humuli* (Linnaeus, 1758) Ghost Moth

NEPTICULIDAE

- 4.002 *Stigmella lapponica* (Wocke, 1862)
- 4.003 *Stigmella confusella* (Wood, 1894)
- 4.005 *Stigmella betulicola* (Stainton, 1856) +
- 4.007 *Stigmella luteella* (Stainton, 1857)
- 4.008 *Stigmella glutinosae* (Stainton, 1858) +
- 4.010 *Stigmella microtheriella* (Stainton, 1854)
- 4.015 *Stigmella anomalella* (Goeze, 1783) Rose Leaf Miner
- 4.018 *Stigmella ulmivora* (Fologne, 1860)
- 4.023 *Stigmella crataegella* (Klimesch, 1936)
- 4.024 *Stigmella magdalenae* (Klimesch, 1950) +
- 4.025 *Stigmella nylandriella* (Tengström, 1848)
- 4.026 *Stigmella oxyacanthella* (Stainton, 1854)
- 4.030 *Stigmella hybnerella* (Hübner, 1796)
- 4.032 *Stigmella floslactella* (Haworth, 1828)
- 4.034 *Stigmella tityrella* (Stainton, 1854)
- 4.035 *Stigmella salicis* (Stainton, 1854) +
- 4.0351 *Stigmella “salicis”* (Cluster 6) currently unnamed +**
- 4.036 *Stigmella myrtillella* (Stainton, 1857) +
- 4.038 *Stigmella obliquella* (Heinemann, 1862) +
- 4.039 *Stigmella trimaculella* (Haworth, 1828) +
- 4.041 *Stigmella sorbi* (Stainton, 1861) +
- 4.042 *Stigmella plagicolella* (Stainton, 1854)

- 4.043 *Stigmella lemniscella* (Zeller, 1839)
- 4.044 *Stigmella continuella* (Stainton, 1856) +
- 4.045 *Stigmella aurella* (Fabricius, 1775)
- 4.051 *Stigmella poterii* (Stainton, 1857) +
- 4.052 *Stigmella filipendulae* (Wocke, 1871) +
- 4.054 *Stigmella perpygmaeella* (Doubleday, 1859) +
- 4.055 *Stigmella hemargyrella* (Kollar, 1832)
- 4.061 *Stigmella atricapitella* (Haworth, 1828) +
- 4.063 *Stigmella roborella* (Johansson, 1971) +
- 4.068 *Trifurcula immundella* (Zeller, 1839) +
- 4.071 *Bohemannia pulverosella* (Stainton, 1849)
- 4.078 *Fomoria septembrella* (Stainton, 1849) +
- 4.082 *Ectoedemia intimella* (Zeller, 1848) +
- 4.089 *Ectoedemia albifasciella* (Heinemann, 1871) +
- 4.090 *Ectoedemia subbimaculella* (Haworth, 1828) +
- 4.091 *Ectoedemia heringi* (Toll, 1934) +
- 4.094 *Ectoedemia angulifasciella* (Stainton, 1849) +
- 4.095 *Ectoedemia atricollis* (Stainton, 1857) +
- 4.099 *Ectoedemia occultella* (Linnaeus, 1767)
- 4.100 *Ectoedemia minimella* (Zetterstedt, 1839) +

OPOSTEGIDAE

- 5.004 *Pseudopostega crepusculella* (Zeller, 1839) +

HELIOZELIDAE

- 6.003 *Heliozela sericiella* (Haworth, 1828) +
- 6.004 *Heliozela resplendella* (Stainton, 1851) +
- 6.005 *Heliozela hammoniella* Sorhagen, 1885 +

ADELIDAE

- 7.001 *Nemophora degeerella* (Linnaeus, 1758) +
- 7.005 *Nemophora minimella* ([Denis & Schiffermüller], 1775) +
- 7.006 *Adela reaumurella* (Linnaeus, 1758) +
- 7.007 *Adela cuprella* ([Denis & Schiffermüller], 1775) +
- 7.010 *Cauchas rufimitrella* (Scopoli, 1763) +
- 7.012 *Nematopogon schwarziellus* Zeller, 1839
- 7.014 *Nematopogon metaxella* (Hübner, [1813]) +
- 7.015 *Nematopogon swammerdamella* (Linnaeus, 1758) +

INCURVARIIDAE

- 8.001 *Incurvaria pectinea* Haworth, 1828
8.002 *Incurvaria masculella* ([Denis & Schiffermüller], 1775) +
8.004 *Incurvaria praelatella* ([Denis & Schiffermüller], 1775)
8.005 *Phylloporia bistrigella* (Haworth, 1828) +

PRODOXIDAE

- 9.002 *Lampronia luzella* (Hübner, [1817]) +

TISCHERIIDAE

- 10.001 *Tischeria ekebladella* (Bjerkander, 1795) +
10.003 *Coptotriche marginea* (Haworth, 1828)

PSYCHIDAE

- 11.001 *Diplodoma laichartingella* (Goeze, 1783) +
11.009 *Luffia lapidella* (Goeze, 1783) +
11.012 *Psyche casta* (Pallas, 1767)

TINEIDAE

- 12.006 *Infurcitinea argentimaculella* (Stainton, 1849) +
12.016 *Nemapogon cloacella* (Haworth, 1828) Cork Moth +
12.027 *Tinea pellionella* Linnaeus, 1758 Case-bearing Clothes Moth +
12.030 *Tinea pallescentella* Stainton, 1851 Large Pale Clothes Moth +
12.032 *Tinea semifulvella* Haworth, 1828
12.033 *Tinea trinotella* Thunberg, 1794 +
12.036 *Monopis laevigella* ([Denis & Schiffermüller], 1775) Skin Moth
12.039 *Monopis crocicapitella* (Clemens, 1859) +
12.048 *Psychoides filicivora* (Meyrick, 1937)

BUCCULATRICIDAE

- 14.002 *Bucculatrix nigricomella* (Zeller, 1839) +
14.003 *Bucculatrix maritima* Stainton, 1851 +
14.008 *Bucculatrix cidarella* (Zeller, 1839) +
14.010 *Bucculatrix ulmella* Zeller, 1848 +
14.013 *Bucculatrix demaryella* (Duponchel, 1840) +

GRACILLARIIDAE

- 15.002 *Caloptilia cuculipennella* (Hübner, 1796) +
15.004 *Caloptilia elongella* (Linnaeus, 1761)
15.005 *Caloptilia betulicola* (Hering, 1928) +
15.006 *Caloptilia rufipennella* (Hübner, 1796) +
15.008 *Caloptilia alchimiella* (Scopoli, 1763) +
15.009 *Caloptilia robustella* Jäckh, 1972 +

- 15.010 *Caloptilia stigmatella* (Fabricius, 1781)
- 15.011 *Caloptilia falconipennella* (Hübner, [1813]) +
- 15.014 *Gracillaria syringella* (Fabricius, 1794)
- 15.015 *Aspilapteryx tringipennella* (Zeller, 1839)
- 15.016 *Euspilapteryx auroguttella* Stephens, 1835 +
- 15.018 *Povolnya leucapennella* (Stephens, 1835)
- 15.019 *Acrocercops brongniardella* (Fabricius, 1798) +
- 15.022 *Callisto denticulella* (Thunberg, 1794) +
- 15.025 *Parornix betulae* (Stainton, 1854) +
- 15.028 *Parornix anglicella* (Stainton, 1850)
- 15.029 *Parornix devoniella* (Stainton, 1850) +
- 15.030 *Parornix scoticella* (Stainton, 1850) +
- 15.033 *Parornix torquillella* (Zeller, 1850)
- 15.035 *Phyllonorycter roboris* (Zeller, 1839) +
- 15.039 *Phyllonorycter quercifoliella* (Zeller, 1839) +
- 15.040 *Phyllonorycter messaniella* (Zeller, 1846)
- 15.043 *Phyllonorycter oxyacanthae* (Frey, 1856)
- 15.044 *Phyllonorycter sorbi* (Frey, 1855)
- 15.045 *Phyllonorycter mespilella* (Hübner, [1805]) +
- 15.046 *Phyllonorycter blancardella* (Fabricius, 1781) +
- 15.047 *Phyllonorycter hostis* Triberti, 2007 +
- 15.049 *Phyllonorycter spinicolella* (Zeller, 1846)
- 15.052 *Phyllonorycter corylifoliella* (Hübner, 1796)
- 15.053 *Phyllonorycter leucographella* (Zeller, 1850) Firethorn Leaf Miner +
- 15.055 *Phyllonorycter viminetorum* (Stainton, 1854) +
- 15.056 *Phyllonorycter salicicolella* (Sircom, 1848) +
- 15.058 *Phyllonorycter hilaella* (Zetterstedt, 1839) +
- 15.063 *Phyllonorycter maestingella* (Müller, 1764)
- 15.064 *Phyllonorycter coryli* (Nicelli, 1851) Nut Leaf Blister Moth
- 15.067 *Phyllonorycter rajella* (Linnaeus, 1758) +
- 15.071 *Phyllonorycter nigrescentella* (Logan, 1851)
- 15.073 *Phyllonorycter lautella* (Zeller, 1846) +
- 15.075 *Phyllonorycter ulmifoliella* (Hübner, [1817]) +
- 15.076 *Phyllonorycter emberizaepenella* (Bouché, 1834) +
- 15.080 *Phyllonorycter froelichiella* (Zeller, 1839) +
- 15.081 *Phyllonorycter nicellii* (Stainton, 1851) +
- 15.082 *Phyllonorycter klemannella* (Fabricius, 1781) +

- 15.083 *Phyllonorycter trifasciella* (Haworth, 1828) +
15.086 *Phyllonorycter geniculella* (Ragonot, 1874) +
15.089 *Cameraria ohridella* Deschka & Dimić, 1986 +

YPONOMEUTIDAE

- 16.001 *Yponomeuta evonymella* (Linnaeus, 1758) Bird-cherry Ermine +
16.002 *Yponomeuta padella* (Linnaeus, 1758) Orchard Ermine
16.003 *Yponomeuta malinellus* Zeller, 1838 Apple Ermine +
16.004 *Yponomeuta cagnagella* (Hübner, [1813]) Spindle Ermine +
16.005 *Yponomeuta rorella* (Hübner, 1796) Willow Ermine +
16.010 *Zelleria hepariella* Stainton, 1849 +
16.014 *Pseudoswammerdamia combinella* (Hübner, 1786)
16.015 *Swammerdamia caesiella* (Hübner, 1796)
16.020 *Paraswammerdamia nebulella* (Goeze, 1783) +
16.022 *Cedestis subfasciella* (Stephens, 1834) +
16.023 *Ocnerostoma piniariella* Zeller, 1847 +
16.024 *Ocnerostoma friesei* Svensson, 1966 +

YPSOLOPHIDAE

- 17.002 *Ypsolopha nemorella* (Linnaeus, 1758)
17.003 *Ypsolopha dentella* (Fabricius, 1775) Honeysuckle Moth
17.005 *Ypsolopha scabrella* (Linnaeus, 1761) +
17.010 *Ypsolopha parenthesella* (Linnaeus, 1761)
17.013 *Ypsolopha vittella* (Linnaeus, 1758) +
17.015 *Ochsenheimeria urella* Fischer von Röslerstamm, 1842 +

PLUTELLIDAE

- 18.001 *Plutella xylostella* (Linnaeus, 1758) Diamond-back Moth
18.003 *Plutella porrectella* (Linnaeus, 1758)
18.005 *Rhigognostis annulatella* (Curtis, 1832) +
18.006 *Rhigognostis incarnatella* (Steudel, 1873) +

GLYPHIPTERIGIDAE

- 19.001 *Orthotelia sparganella* (Thunberg, 1788) +
19.002 *Glyphipterix thrasonella* (Scopoli, 1763)
19.006 *Glyphipterix forsterella* (Fabricius, 1781) +
19.007 *Glyphipterix simpliciella* (Stephens, 1834) Cocksfoot Moth +
19.010 *Digitivalva pulicariae* (Klimesch, 1956)
19.014 *Acrolepia autumnitella* Curtis, 1838 +

AGRYRESTHIIDAE

- 20.001 *Argyresthia laevigatella* Herrich-Schäffer, 1855

- 20.005 *Argyresthia trifasciata* Staudinger, 1871 +
20.007 *Argyresthia cupressella* Walsingham, 1890 Cypress Tip Moth +
20.011 *Argyresthia brockeeella* (Hübner, [1813]) +
20.012 *Argyresthia goedartella* (Linnaeus, 1758) +
20.013 *Argyresthia pygmaeella* ([Denis & Schiffermüller], 1775)
20.015 *Argyresthia curvella* (Linnaeus, 1761) +
20.016 *Argyresthia retinella* Zeller, 1839 +
20.017 *Argyresthia glaucinella* Zeller, 1839 +
20.018 *Argyresthia spinosella* Stainton, 1849 +
20.019 *Argyresthia conjugella* Zeller, 1839 Apple Fruit Moth
20.021 *Argyresthia pruniella* (Clerck, 1759) Cherry Fruit Moth +
20.022 *Argyresthia bonnetella* (Linnaeus, 1758)
20.023 *Argyresthia albistria* (Haworth, 1828) +

LYONETIIDAE

- 21.001 *Lyonetia clerkella* (Linnaeus, 1758) Apple Leaf Miner
21.004 *Leucoptera laburnella* (Stainton, 1851) Laburnum Leaf Miner
21.005 *Leucoptera spartifoliella* (Hübner, [1813]) +
21.008 *Leucoptera malifoliella* (Costa, [1836]) Pear Leaf Blister Moth

PRAYDIDAE

- 22.002 *Prays fraxinella* (Bjerkander, 1784) Ash Bud Moth +
22.003 *Prays ruficeps* (Heinemann, 1854) +

BEDELLIIDAE

- 24.001 *Bedellia somnulentella* (Zeller, 1847) +

OECOPHORIDAE

- 28.009 *Endrosis sarcitrella* (Linnaeus, 1758) White-shouldered House-moth
28.010 *Hofmannophila pseudospretella* (Stainton, 1849) Brown House-moth
28.012 *Borkhausenia fuscescens* (Haworth, 1828) +
28.017 *Batia lambdella* (Donovan, 1793) +
28.019 *Esperia sulphurella* (Fabricius, 1775) +

CHIMABACHIDAE

- 29.001 *Diurnea fagella* ([Denis & Schiffermüller], 1775)
29.002 *Diurnea lipsiella* ([Denis & Schiffermüller], 1775) +

PELEOPODIDAE

- 31.001 *Carcina quercana* (Fabricius, 1775)

DEPRESSARIIDAE

- 32.006 *Exaeretia allisella* Stainton, 1849 +
32.007 *Agonopterix ocellana* (Fabricius, 1775)

- 32.008 *Agonopterix liturosa* (Haworth, 1811) +
- 32.009 *Agonopterix purpurea* (Haworth, 1811)
- 32.015 *Agonopterix subpropinquella* (Stainton, 1849) +
- 32.016 *Agonopterix propinquella* (Treitschke, 1835)
- 32.017 *Agonopterix arenella* ([Denis & Schiffermüller], 1775) +
- 32.018 *Agonopterix heracliana* (Linnaeus, 1758)
- 32.019 *Agonopterix ciliella* (Stainton, 1849)
- 32.023 *Agonopterix rotundella* (Douglas, 1846) +
- 32.024 *Agonopterix assimilella* (Treitschke, 1832)
- 32.029 *Agonopterix umbellana* (Fabricius, 1794) +
- 32.030 *Agonopterix nervosa* (Haworth, 1811)
- 32.031 *Agonopterix alstromeriana* (Clerck, 1759)
- 32.032 *Agonopterix angelicella* (Hübner, [1813]) +
- 32.035 *Agonopterix yeatiana* (Fabricius, 1781) +
- 32.036 *Depressaria radiella* (Goeze, 1783) Parsnip Moth +
- 32.039 *Depressaria daucella* ([Denis & Schiffermüller], 1775) +
- 32.040 *Depressaria ultimella* Stainton, 1849 +

COSMOPTERIGIDAE

- 34.004 *Limnaecia phragmitella* Stainton, 1851 +

GELECHIIDAE

- 35.004 *Approaerema taeniolella* (Zeller, 1839) +
- 35.009 *Approaerema polychromella* (Rebel, 1902) +
- 35.010 *Approaerema anthyllidella* (Hübner, [1813]) +
- 35.017 *Neofaculta ericetella* (Geyer, [1832]) +
- 35.018 *Hypatima rhomboidella* (Linnaeus, 1758) +
- 35.020 *Anarsia spartiella* (Schrank, 1802) +
- 35.026 *Acompsia cinerella* (Clerck, 1759) +
- 35.031 *Helcystogramma rufescens* (Haworth, 1828)
- 35.036 *Chrysoesthia sexguttella* (Thunberg, 1794)
- 35.038 *Bryotropha domestica* (Haworth, 1828)
- 35.040 *Bryotropha terrella* ([Denis & Schiffermüller], 1775)
- 35.041 *Bryotropha desertella* (Douglas, 1850)
- 35.046 *Bryotropha senectella* (Zeller, 1839) +
- 35.047 *Bryotropha affinis* (Haworth, 1828) +
- 35.048 *Bryotropha umbrosella* (Zeller, 1839) +
- 35.049 *Bryotropha similis* (Stainton, 1854) +
- 35.055 *Metzneria aestivella* (Zeller, 1839) +

- 35.058 *Metzneria metzneriella* (Stainton, 1851) +
- 35.060 *Apodia martini* Petry, 1911 +
- 35.061 *Ptocheuusa paupella* (Zeller, 1847) +
- 35.065 *Monochroa cytisella* (Curtis, 1837) +
- 35.066 *Monochroa tenebrella* (Hübner, [1817]) +
- 35.071 *Monochroa lucidella* (Stephens, 1834) +
- 35.079 *Oxypteryx wilkella* (Linnaeus, 1758) +
- 35.081 *Oxypteryx atrella* ([Denis & Schiffermüller], 1775) +
- 35.085 *Athrips mouffetella* (Linnaeus, 1758) +
- 35.093 *Mirificarma mulinella* (Zeller, 1839) +
- 35.109 *Scrobipalpa acuminatella* (Sircom, 1850) +
- 35.114 *Scrobipalpa instabilella* (Douglas, 1846) +
- 35.115 *Scrobipalpa nitentella* (Fuchs, 1902) +
- 35.117 *Scrobipalpa atriplicella* (Fischer von Röslerstamm, [1841]) +
- 35.118 *Scrobipalpa ocellatella* (Boyd, 1858) Beet Moth +
- 35.119 *Scrobipalpa samadensis* (Pfaffenzeller, 1870) +
- 35.120 *Scrobipalpa artemisiella* (Treitschke, 1833) Thyme Moth
- 35.123 *Scrobipalpa costella* (Humphreys & Westwood, 1845) +
- 35.126 *Phthorimaea operculella* (Zeller, 1873) Potato Tuber Moth +
- 35.127 *Tuta absoluta* (Meyrick, 1917) +
- 35.128 *Caryocolum alsinella* (Zeller, 1868) +
- 35.131 *Caryocolum marmorea* (Haworth, 1828) +
- 35.148 *Carpatolechia fugitivella* (Zeller, 1839) +
- 35.159 *Exoteleia dodecella* (Linnaeus, 1758) +

BATRACHEDRIDAE

- 36.001 *Batrachedra praeangusta* (Haworth, 1828) +

COLEOPHORIDAE

- 37.005 *Coleophora lutipennella* (Zeller, 1838) +
- 37.006 *Coleophora gryhipennella* (Hübner, 1796) +
- 37.007 *Coleophora flavipennella* (Duponchel, [1843]) +
- 37.015 *Coleophora serratella* (Linnaeus, 1761)
- 37.016 *Coleophora spinella* (Schrank, 1802) Apple & Plum Case-bearer
- 37.022 *Coleophora lusciniapennella* (Treitschke, 1833) +
- 37.044 *Coleophora discordella* Zeller, 1849
- 37.046 *Coleophora deauratella* Lienig & Zeller, 1846
- 37.050 *Coleophora albidella* ([Denis & Schiffermüller], 1775) +
- 37.055 *Coleophora pyrrhulipennella* Zeller, 1839 +

- 37.063 *Coleophora albicosta* (Haworth, 1828) +
37.066 *Coleophora laricella* (Hübner, [1817]) Larch Case-bearer +
37.068 *Coleophora adjunctella* Hodgkinson, 1882
37.069 *Coleophora caespitiella* Zeller, 1839 +
37.070 *Coleophora tamesis* Waters, 1929 +
37.071 *Coleophora glaucicolella* Wood, 1892
37.073 *Coleophora alticolella* Zeller, 1849
37.080 *Coleophora virgaureae* Stainton, 1857
37.083 *Coleophora saxicolella* (Duponchel, [1843])
37.086 *Coleophora versurella* Zeller, 1849 +
37.088 *Coleophora atriplicis* Meyrick, [1928]
37.093 *Coleophora peribenanderi* Toll, 1943 +
37.099 *Coleophora striatipennella* Nylander, [1848] +
37.103 *Coleophora follicularis* (Vallot, 1802) +
37.104 *Coleophora adpersella* Benander, 1939 +
37.106 *Coleophora paripennella* Zeller, 1839 +
37.108 *Coleophora salicorniae* Heinemann & Wocke, [1876] +

ELACHISTIDAE

- 38.001 *Perittia obscurepunctella* (Stainton, 1848) +
38.004 *Elachista argentella* (Clerck, 1759)
38.005 *Elachista triatomea* (Haworth, 1828) +
38.016 *Elachista subalbidella* Schläger, 1847 +
38.025 *Elachista atricomella* Stainton, 1849 +
38.029 *Elachista luticomella* Zeller, 1839 +
38.030 *Elachista albifrontella* (Hübner, [1817])
38.032 *Elachista apicipunctella* Stainton, 1849 +
38.037 *Elachista canapennella* (Hübner, [1813]) +
38.038 *Elachista rufocinerea* (Haworth, 1828)
38.039 *Elachista maculicerusella* (Bruand, 1859) +
38.043 *Elachista scirpi* Stainton, 1887
38.045 *Elachista utonella* Frey, 1856 +
38.047 *Elachista freyerella* (Hübner, [1825])
38.048 *Elachista consortella* Stainton, 1851+

PARAMETRIOTIDAE

- 39.001 *Blastodacna hellerella* (Duponchel, 1838) +
39.003 *Spuleria flavicaput* (Haworth, 1828) +

MOMPHIDAE

- 40.002 *Mompha ochraceella* (Curtis, 1839) +
40.004 *Mompha propinquella* (Stainton, 1851) +
40.008 *Mompha subbistrigella* (Haworth, 1828) +
40.010 *Mompha epilobiella* ([Denis & Schiffermüller], 1775) +
40.013 *Mompha locupletella* ([Denis & Schiffermüller], 1775) +
40.015 *Mompha raschkiella* (Zeller, 1839) +

BLASTOBASIDAE

- 41.002 *Blastobasis adustella* Walsingham, 1894
41.003 *Blastobasis lacticolella* Rebel, 1940 +

SCYTHRIDIDAE

- 43.004 *Scythris picaepennis* (Haworth, 1828) +

ALUCITIDAE

- 44.001 *Alucita hexadactyla* Linnaeus, 1758 Many-plumed Moth

PTEROPHORIDAE

- 45.004 *Platyptilia gonodactyla* ([Denis & Schiffermüller], 1775) Triangle Plume +
45.006 *Platyptilia isodactylus* (Zeller, 1852) Hoary Plume +
45.008 *Gillmeria pallidactyla* (Haworth, 1811) Yarrow Plume +
45.010 *Amblyptilia acanthadactyla* (Hübner, [1813]) Beautiful Plume +
45.011 *Amblyptilia punctidactyla* (Haworth, 1811) Brindled Plume
45.012 *Stenoptilia pterodactyla* (Linnaeus, 1761) Brown Plume
45.013 *Stenoptilia bipunctidactyla* (Scopoli, 1763) Twin-spot Plume
45.021 *Stenoptilia zophodactylus* (Duponchel, 1840) Dowdy Plume +
45.023 *Marasmarcha lunaedactyla* (Haworth, 1811) Crescent Plume
45.027 *Oxyptilus laetus* (Zeller, 1847) Scarce Light Plume +
45.030 *Pterophorus pentadactyla* (Linnaeus, 1758) White Plume
45.037 *Oidaematophorus lithodactyla* (Treitschke, 1833) Dusky Plume +
45.043 *Adaina microdactyla* (Hübner, [1813]) Hemp Agrimony Plume
45.044 *Emmelinea monodactyla* (Linnaeus, 1758) Common Plume

SCHRECKENSTEINIIDAE

- 46.001 *Schreckensteinia festaliella* (Hübner, [1819])

EPERMENIIDAE

- 47.004 *Epermenia aequidentellus* (Hofmann, 1867) +
47.005 *Epermenia chaerophyllella* (Goeze, 1783) +

CHOREUTIDAE

- 48.001 *Anthophila fabriciana* (Linnaeus, 1767)
48.002 *Prochoreutis myllerana* (Fabricius, 1794) +

TORTRICIDAE

- 49.001 *Olindia schumacherana* (Fabricius, 1787) +
- 49.004 *Ditula angustiorana* (Haworth, 1811) Red-barred Tortrix +
- 49.005 *Epagoge grotiana* (Fabricius, 1781) +
- 49.008 *Philedone gerningana* ([Denis & Schiffermüller], 1775)
- 49.009 *Capua vulgana* (Frölich, 1828) +
- 49.013 *Archips podana* (Scopoli, 1763) Large Fruit-tree Tortrix +
- 49.015 *Archips xylosteana* (Linnaeus, 1758) Variegated Golden Tortrix +
- 49.016 *Archips rosana* (Linnaeus, 1758) Rose Tortrix +
- 49.022 *Ptycholoma lecheana* (Linnaeus, 1758)
- 49.024 *Pandemis corylana* (Fabricius, 1794) Chequered Fruit-tree Tortrix
- 49.025 *Pandemis cerasana* (Hübner, 1786) Barred Fruit-tree Tortrix
- 49.026 *Pandemis heparana* ([Denis & Schiffermüller], 1775) Dark Fruit-tree Tortrix
- 49.028 *Syndemis musculana* (Hübner, [1799])
- 49.029 *Lozotaenia forsterana* (Fabricius, 1781)
- 49.030 *Cacoecimorpha pronubana* (Hübner, [1799]) Carnation Tortrix +
- 49.031 *Zelotherses paleana* (Hübner, 1793) Timothy Tortrix
- 49.032 *Zelotherses unitana* (Hübner, [1799]) +
- 49.033 *Aphelia viburnana* ([Denis & Schiffermüller], 1775) Bilberry Tortrix
- 49.035 *Clepsis senecionana* (Hübner, [1819]) +
- 49.036 *Clepsis rurinana* (Linnaeus, 1758) +
- 49.037 *Clepsis spectrana* (Treitschke, 1830) Cyclamen Tortrix +
- 49.038 *Clepsis consimilana* (Hübner, [1817])
- 49.039 *Epiphyas postvittana* (Walker, 1863) Light Brown Apple Moth +
- 49.044 *Tortricodes alternella* ([Denis & Schiffermüller], 1775) +
- 49.045 *Eana osseana* (Scopoli, 1763) +
- 49.049 *Cnephasia incertana* (Treitschke, 1835) Light Grey Tortrix +
- 49.050 *Cnephasia stephensiana* (Doubleday, [1849]) Grey Tortrix +
- 49.051 *Cnephasia asseclana* ([Denis & Schiffermüller], 1775) Flax Tortrix +
- 49.056 *Cnephasia conspersana* Douglas, 1846
- 49.059 *Tortrix viridana* Linnaeus, 1758 Green Oak Tortrix
- 49.060 *Aleimma loeflingiana* (Linnaeus, 1758) +
- 49.061 *Acleris holmiana* (Linnaeus, 1758)
- 49.062 *Acleris forsskaleana* (Linnaeus, 1758) +
- 49.063 *Acleris bergmanniana* (Linnaeus, 1758)
- 49.064 *Acleris caledoniana* (Stephens, 1852) +
- 49.066 *Acleris laterana* (Fabricius, 1794)

- 49.069 *Acleris sparsana* ([Denis & Schiffermüller], 1775)
- 49.070 *Acleris rhombana* ([Denis & Schiffermüller], 1775) Rhomboid Tortrix +
- 49.071 *Acleris emargana* (Fabricius, 1775) +
- 49.077 *Acleris variegana* ([Denis & Schiffermüller], 1775) Garden Rose Tortrix
- 49.078 *Acleris aspersana* (Hübner, [1817])
- 49.080 *Acleris hastiana* (Linnaeus, 1758)
- 49.082 *Acleris hyemana* (Haworth, 1811)
- 49.083 *Acleris ferrugana* ([Denis & Schiffermüller], 1775)
- 49.084 *Acleris notana* (Donovan, 1806) +
- 49.087 *Acleris literana* (Linnaeus, 1758)
- 49.091 *Pseudargyrotoza conwagana* (Fabricius, 1775)
- 49.092 *Phtheochroa inopiana* (Haworth, 1811) +
- 49.096 *Hysterophora maculosana* (Haworth, 1811) +
- 49.097 *Cochylimorpha straminea* (Haworth, 1811) +
- 49.101 *Phalonidia manniana* (Fischer von Röslerstamm, 1839) +
- 49.103 *Phalonidia affinitana* (Douglas, 1846) +
- 49.105 *Gynnidomorpha vectisana* (Humphreys & Westwood, 1845) +
- 49.106 *Gynnidomorpha minimana* (Caradja, 1916) +
- 49.109 *Agapeta hamana* (Linnaeus, 1758) +
- 49.110 *Agapeta zoegana* (Linnaeus, 1767)
- 49.111 *Eupoecilia angustana* (Hübner, [1799])
- 49.115 *Aethes piercei* Obratzsov, 1952 +
- 49.124 *Aethes francillana* (Fabricius, 1794) +
- 49.127 *Aethes cnicana* (Westwood, 1854)
- 49.128 *Aethes rubigana* (Treitschke, 1830)
- 49.133 *Thyraylia nana* (Haworth, 1811) +
- 49.135 *Cochylis flaviciliana* (Westwood, 1854) +
- 49.137 *Neocochylis dubitana* (Hübner, [1799]) +
- 49.139 *Cochylischroa atricapitana* (Stephens, 1852) +
- 49.144 *Eudemis profundana* ([Denis & Schiffermüller], 1775) +
- 49.146 *Apotomis semifasciana* (Haworth, 1811) +
- 49.154 *Orthotaenia undulana* ([Denis & Schiffermüller], 1775) +
- 49.156 *Hedya nubiferana* (Haworth, 1811) Marbled Orchard Tortrix +
- 49.157 *Hedya pruniana* (Hübner, [1799]) Plum Tortrix
- 49.158 *Hedya ochroleucana* (Frölich, 1828) +
- 49.162 *Celypha rosaceana* Schläger, 1847 +
- 49.164 *Celypha cespitana* (Hübner, [1817])

- 49.166 *Celypha lacunana* ([Denis & Schiffermüller], 1775)
- 49.169 *Celypha aurofasciana* (Haworth, 1811) +
- 49.180 *Piniphila bifasciana* (Haworth, 1811) +
- 49.183 *Lobesia abscisana* (Doubleday, [1849]) +
- 49.185 *Lobesia littoralis* (Humphreys & Westwood, 1845)
- 49.188 *Endothenia marginana* (Haworth, 1811) +
- 49.190 *Endothenia ustulana* (Haworth, 1811) +
- 49.192 *Endothenia ericetana* (Humphreys & Westwood, 1845) +
- 49.193 *Endothenia quadrimaculana* (Haworth, 1811)
- 49.194 *Bactra lancealana* (Hübner, [1799]) +
- 49.197 *Bactra robustana* (Christoph, 1872) +
- 49.198 *Bactra venosana* (Zeller, 1847) +
- 49.200 *Enarmonia formosana* (Scopoli, 1763) Cherry Bark Tortrix +
- 49.207 *Ancylis geminana* (Donovan, 1806) +
- 49.214 *Ancylis badiana* ([Denis & Schiffermüller], 1775) +
- 49.220 *Rhopobota myrtillana* (Humphreys & Westwood, 1845) +
- 49.223 *Rhopobota naevana* (Hübner, [1817]) Holly Tortrix +
- 49.224 *Spilonota ocellana* ([Denis & Schiffermüller], 1775) Bud Moth +
- 49.225 *Spilonota laricana* (Heinemann, 1863) +
- 49.230 *Epinotia trigonella* (Linnaeus, 1758) +
- 49.234 *Epinotia abbreviana* (Fabricius, 1794) +
- 49.237 *Epinotia signatana* (Douglas, 1845) +
- 49.239 *Epinotia mercuriana* (Frölich, 1828)
- 49.240 *Epinotia immundana* (Fischer von Röslerstamm, 1839)
- 49.242 *Epinotia nanana* (Treitschke, 1835) +
- 49.244 *Epinotia subocellana* (Donovan, 1806) +
- 49.246 *Epinotia pygmaeana* (Hübner, [1799]) +
- 49.247 *Epinotia subsequana* (Haworth, 1811) +
- 49.248 *Epinotia tenerana* ([Denis & Schiffermüller], 1775) Nut Bud Moth +
- 49.249 *Epinotia ramella* (Linnaeus, 1758)
- 49.251 *Epinotia rubiginosana* (Herrich-Schäffer, 1851) +
- 49.252 *Epinotia tedella* (Clerck, 1759) +
- 49.253 *Epinotia fraternana* (Haworth, 1811) +
- 49.254 *Epinotia bilunana* (Haworth, 1811) +
- 49.255 *Epinotia nisella* (Clerck, 1759) +
- 49.259 *Zeiraphera ratzeburgiana* (Saxesen, 1840) Spruce Bud Moth +
- 49.260 *Zeiraphera isertana* (Fabricius, 1794) +

- 49.261 *Crociosema plebejana* Zeller, 1847 +
- 49.264 *Eucosma obumbratana* (Lienig & Zeller, 1846) +
- 49.265 *Eucosma cana* (Haworth, 1811) +
- 49.266 *Eucosma hohenwartiana* ([Denis & Schiffermüller], 1775) +
- 49.269 *Eucosma campoliliana* ([Denis & Schiffermüller], 1775) +
- 49.272 *Eucosma tripoliana* (Barrett, 1880) +
- 49.275 *Eucosma conterminana* (Guenée, 1845) +
- 49.279 *Gypsonoma dealbana* (Frölich, 1828)
- 49.281 *Gypsonoma sociana* (Haworth, 1811) +
- 49.285 *Epiblema scutulana* ([Denis & Schiffermüller], 1775)
- 49.286 *Epiblema cirsiana* (Zeller, 1843) +
- 49.289 *Epiblema costipunctana* (Haworth, 1811) +
- 49.292 *Notocelia cynosbatella* (Linnaeus, 1758)
- 49.294 *Notocelia uddmanniana* (Linnaeus, 1758) Bramble Shoot Moth
- 49.295 *Notocelia roborana* ([Denis & Schiffermüller], 1775) +
- 49.296 *Notocelia incarnatana* (Hübner, [1800]) +
- 49.297 *Notocelia rosaecolana* (Doubleday, 1850) +
- 49.298 *Notocelia trimaculana* (Haworth, 1811) +
- 49.304 *Clavigesta purdeyi* (Durrant, 1911) Pine Leaf-mining Moth +
- 49.305 *Rhyacionia buoliana* ([Denis & Schiffermüller], 1775) Pine Shoot Moth +
- 49.309 *Dichrorampha plumbana* (Scopoli, 1763) +
- 49.313 *Dichrorampha acuminatana* (Lienig & Zeller, 1846) +
- 49.320 *Dichrorampha alpinana* (Treitschke, 1830) +
- 49.321 *Dichrorampha petiverella* (Linnaeus, 1758)
- 49.322 *Dichrorampha plumbagana* (Treitschke, 1830) +
- 49.323 *Dichrorampha alpestrana* ([Zeller], 1843) +
- 49.324 *Cydia nigricana* (Fabricius, 1794) Pea Moth +
- 49.325 *Cydia ulicetana* (Haworth, 1811)
- 49.327 *Cydia microgrammana* (Guenée, 1845) +
- 49.332 *Cydia coniferana* (Saxesen, 1840) +
- 49.338 *Cydia pomonella* (Linnaeus, 1758) Codling Moth
- 49.341 *Cydia splendana* (Hübner, [1799]) +
- 49.342 *Cydia fagiglandana* (Zeller, 1841) +
- 49.343 *Cydia amplana* (Hübner, [1799]) +
- 49.345 *Lathronympha strigana* (Fabricius, 1775)
- 49.347 *Grapholita compositella* (Fabricius, 1775) +
- 49.351 *Grapholita lunulana* ([Denis & Schiffermüller], 1775) +

- 49.354 *Grapholita jungiella* (Clerck, 1759) +
 49.3541 *Grapholita molesta* (Busck, 1916) Oriental Fruit Moth +
 49.357 *Grapholita funebrana* Treitschke, 1835 Plum Fruit Moth +
 49.358 *Grapholita tenebrosana* Duponchel, [1843] +
 49.359 *Grapholita janthinana* (Duponchel, 1835) +
 49.363 *Pammene argyrana* (Hübner, [1799]) +
 49.367 *Pammene fasciana* (Linnaeus, 1761) +
 49.371 *Pammene rhediella* (Clerck, 1759) Fruitlet Mining Tortrix +
 49.372 *Pammene populana* (Fabricius, 1787) +
 49.375 *Pammene regiana* (Zeller, 1849) +
 49.376 *Pammene aurita* Razowski, 1992 +
 49.379 *Pammene aurana* (Fabricius, 1775) +
 49.380 *Pammene gallicana* (Guenée, 1845) +

COSSIDAE

- 50.001 *Cossus cossus* (Linnaeus, 1758) Goat Moth +

SESIIDAE

- 52.002 *Sesia apiformis* (Clerck, 1759) Hornet Moth
 52.003 *Sesia bembeciformis* (Hübner, [1806]) Lunar Hornet Moth +
 52.008 *Synanthedon formicaeformis* (Esper, 1782) Red-tipped Clearwing +

ZYGAENIDAE

- 54.002 *Adscita statices* (Linnaeus, 1758) Forester
 54.008 *Zygaena filipendulae* (Linnaeus, 1758) Six-spot Burnet

HESPERIIDAE

- 57.001 *Erynnis tages* (Linnaeus, 1758) Dingy Skipper
 57.005 *Thymelicus lineola* (Ochsenheimer, 1808) Essex Skipper +

PIERIDAE

- 58.002 *Leptidea juvernica* Williams, 1946 Cryptic Wood White
 58.003 *Anthocharis cardamines* (Linnaeus, 1758) Orange Tip
 58.006 *Pieris brassicae* (Linnaeus, 1758) Large White
 58.007 *Pieris rapae* (Linnaeus, 1758) Small White
 58.008 *Pieris napi* (Linnaeus, 1758) Green-veined White
 58.010 *Colias croceus* (Geoffroy, 1785) Clouded Yellow
 58.013 *Gonepteryx rhamni* (Linnaeus, 1758) Brimstone

NYMPHALIDAE

- 59.001 *Danaus plexippus* (Linnaeus, 1758) Monarch
 59.002 *Lasiommata megera* (Linnaeus, 1767) Wall
 59.003 *Pararge aegeria* (Linnaeus, 1758) Speckled Wood

- 59.005 *Coenonympha pamphilus* (Linnaeus, 1758) Small Heath
 59.009 *Aphantopus hyperantus* (Linnaeus, 1758) Ringlet
 59.010 *Maniola jurtina* (Linnaeus, 1758) Meadow Brown
 59.011 *Pyronia tithonus* (Linnaeus, 1771) Gatekeeper
 59.013 *Hipparchia semele* (Linnaeus, 1758) Grayling
 59.016 *Issoria lathonia* (Linnaeus, 1758) Queen of Spain Fritillary
 59.017 *Argynnis paphia* (Linnaeus, 1758) Silver-washed Fritillary
 59.019 *Speyeria aglaja* (Linnaeus, 1758) Dark Green Fritillary
 59.023 *Vanessa atalanta* (Linnaeus, 1758) Red Admiral
 59.024 *Vanessa cardui* (Linnaeus, 1758) Painted Lady
 59.026 *Aglais io* (Linnaeus, 1758) Peacock
 59.027 *Aglais urticae* (Linnaeus, 1758) Small Tortoiseshell
 59.028 *Nymphalis antiopa* (Linnaeus, 1758) Camberwell Beauty
 59.029 *Nymphalis polychloros* (Linnaeus, 1758) Large Tortoiseshell +
 59.031 *Polygonia c-album* (Linnaeus, 1758) Comma +
 59.033 *Euphydryas aurinia* (Rottemburg, 1775) Marsh Fritillary

LYCAENIDAE

- 61.001 *Lycaena phlaeas* (Linnaeus, 1761) Small Copper
 61.003 *Thecla betulae* (Linnaeus, 1758) Brown Hairstreak
 61.004 *Favonius quercus* (Linnaeus, 1758) Purple Hairstreak
 61.005 *Callophrys rubi* (Linnaeus, 1758) Green Hairstreak
 61.010 *Cupido minimus* (Fuessly, 1775) Small Blue
 61.012 *Celastrina argiolus* (Linnaeus, 1758) Holly Blue
 61.018 *Polyommatus icarus* (Rottemburg, 1775) Common Blue

PYRALIDAE

- 62.001 *Aphomia sociella* (Linnaeus, 1758) Bee Moth
 62.005 *Achroia grisella* (Fabricius, 1794) Lesser Wax Moth +
 62.007 *Cryptoblabes bistriga* (Haworth, 1811)
 62.012 *Pyla fusca* (Haworth, 1811) +
 62.015 *Delplanqueia dilutella* ([Denis & Schiffermüller], 1775) +
 62.020 *Etiella zinckenella* (Treitschke, 1832) +
 62.027 *Dioryctria simplicella* Heinemann, 1863 +
 62.028 *Dioryctria abietella* ([Denis & Schiffermüller], 1775) +
 62.029 *Phycita roborella* ([Denis & Schiffermüller], 1775) +
 62.032 *Nephoterix angustella* (Hübner, 1796) +
 62.035 *Acrobasis advenella* (Zincken, 1818) +
 62.042 *Myelois circumvoluta* (Fourcroy, 1785) Thistle Ermine +

- 62.053 *Ancylosis oblitella* (Zeller, 1848) +
- 62.055 *Homoeosoma nebulella* ([Denis & Schiffermüller], 1775) +
- 62.056 *Homoeosoma nimbella* (Duponchel, 1837) +
- 62.058 *Phycitodes binaevella* (Hübner, [1813]) +
- 62.059 *Phycitodes saxicola* (Vaughan, 1870)
- 62.063 *Ephestia kuehniella* Zeller, 1879 Mediterranean Flour Moth
- 62.065 *Ephestia woodiella* Richards & Thomson, 1932 +
- 62.072 *Pyralis farinalis* (Linnaeus, 1758) Meal Moth

CRAMBIDAE

- 63.005 *Pyrausta despicata* (Scopoli, 1763)
- 63.007 *Pyrausta purpuralis* (Linnaeus, 1758) +
- 63.011 *Uresiphita gilvata* (Fabricius, 1794) +
- 63.014 *Sitochroa palealis* ([Denis & Schiffermüller], 1775) +
- 63.016 *Anania fuscalis* ([Denis & Schiffermüller], 1775)
- 63.018 *Anania coronata* (Hufnagel, 1767)
- 63.022 *Anania crocealis* (Hübner, 1796)
- 63.024 *Anania funebris* (Ström, 1768)
- 63.025 *Anania hortulata* (Linnaeus, 1758) Small Magpie
- 63.028 *Ostrinia nubilalis* (Hübner, 1796) European Corn-borer +
- 63.031 *Udea ferrugalis* (Hübner, 1796) Rusty-dot Pearl
- 63.033 *Udea lutealis* (Hübner, [1809])
- 63.034 *Udea prunalis* ([Denis & Schiffermüller], 1775)
- 63.037 *Udea olivalis* ([Denis & Schiffermüller], 1775)
- 63.038 *Patania ruralis* (Scopoli, 1763) Mother of Pearl
- 63.040 *Mecyna asinalis* (Hübner, [1819]) +
- 63.044 *Diasemiopsis ramburialis* (Duponchel, 1834) +
- 63.047 *Spoladea recurvalis* (Fabricius, 1775) +
- 63.048 *Palpita vitrealis* (Rossi, 1794) +
- 63.051 *Antigastra catalaunalis* (Duponchel, 1833) +
- 63.052 *Nomophila noctuella* ([Denis & Schiffermüller], 1775) Rush Veneer
- 63.054 *Cydalima perspectalis* (Walker, 1859) Box-tree Moth +
- 63.055 *Herpetogramma licarsisalis* (Walker, 1859) Grass Webworm +
- 63.057 *Evergestis forficalis* (Linnaeus, 1758) Garden Pebble
- 63.058 *Evergestis extimalis* (Scopoli, 1763) +
- 63.060 *Evergestis pallidata* (Hufnagel, 1767) +
- 63.0605 *Cornifrons ulceratalis* Lederer, 1858 +
- 63.061 *Hellula undalis* (Fabricius, 1781) Old World Webworm +

- 63.062 *Scoparia subfusca* Haworth, 1811 +
- 63.064 *Scoparia ambigualis* (Treitschke, 1829)
- 63.066 *Scoparia pyralella* ([Denis & Schiffermüller], 1775)
- 63.067 *Eudonia lacustrata* (Panzer, 1804)
- 63.069 *Eudonia angustea* (Curtis, 1827)
- 63.071 *Eudonia lineola* (Curtis, 1827) +
- 63.072 *Eudonia delunella* (Stainton, 1849)
- 63.073 *Eudonia truncicolella* (Stainton, 1849)
- 63.074 *Eudonia mercurella* (Linnaeus, 1758)
- 63.075 *Eudonia pallida* (Curtis, 1827)
- 63.076 *Euchromius ocella* (Haworth, 1811) +
- 63.077 *Chilo phragmitella* (Hübner, [1810]) +
- 63.079 *Calamotropha paludella* (Hübner, [1824]) +
- 63.080 *Chrysoteuchia culmella* (Linnaeus, 1758)
- 63.081 *Crambus pascuella* (Linnaeus, 1758)
- 63.086 *Crambus lathoniellus* (Zincken, 1817) +
- 63.088 *Crambus perllella* (Scopoli, 1763)
- 63.089 *Agriphila tristella* ([Denis & Schiffermüller], 1775)
- 63.092 *Agriphila selasella* (Hübner, [1813])
- 63.093 *Agriphila straminella* ([Denis & Schiffermüller], 1775)
- 63.095 *Agriphila geniculea* (Haworth, 1811)
- 63.099 *Catoptria pinella* (Linnaeus, 1758) +
- 63.100 *Catoptria margaritella* ([Denis & Schiffermüller], 1775) +
- 63.110 *Pediasia aridella* (Thunberg, 1788) +
- 63.112 *Platytes alpinella* (Hübner, [1813]) +
- 63.114 *Elophila nymphaeata* (Linnaeus, 1758) Brown China-mark
- 63.115 *Acentria ephemerella* ([Denis & Schiffermüller], 1775) Water Veneer +
- 63.116 *Cataclysta lemnata* (Linnaeus, 1758) Small China-mark +
- 63.117 *Parapoynx stratiotata* (Linnaeus, 1758) Ringed China-mark +
- 63.118 *Nymphula nitidulata* (Hufnagel, 1767) Beautiful China-mark
- 63.122 *Donacaula mucronella* ([Denis & Schiffermüller], 1775) +

DREPANIDAE

- 65.003 *Watsonalla cultraria* (Fabricius, 1775) Barred Hook-tip +
- 65.005 *Drepana falcataria* (Linnaeus, 1758) Pebble Hook-tip +
- 65.007 *Cilix glaucata* (Scopoli, 1763) Chinese Character
- 65.008 *Thyatira batis* (Linnaeus, 1758) Peach Blossom
- 65.009 *Habrosyne pyritoides* (Hufnagel, 1766) Buff Arches

- 65.012 *Tetheella fluctuosa* (Hübner, [1803]) Satin Lutestring
 65.013 *Ochropacha duplaris* (Linnaeus, 1761) Common Lutestring
 65.016 *Achlya flavicornis* (Linnaeus, 1758) Yellow Horned +

LASIOCAMPIDAE

- 66.001 *Poecilocampa populi* (Linnaeus, 1758) December Moth
 66.003 *Malacosoma neustria* (Linnaeus, 1758) Lacky
 66.007 *Lasiocampa quercus* (Linnaeus, 1758) Oak Eggar
 66.008 *Macrothylacia rubi* (Linnaeus, 1758) Fox Moth
 66.010 *Euthrix potatoria* (Linnaeus, 1758) Drinker

SATURNIIDAE

- 68.001 *Saturnia pavonia* (Linnaeus, 1758) Emperor Moth

SPHINGIDAE

- 69.002 *Smerinthus ocellata* (Linnaeus, 1758) Eyed Hawk-moth
 69.003 *Laothoe populi* (Linnaeus, 1758) Poplar Hawk-moth
 69.004 *Agrius convolvuli* (Linnaeus, 1758) Convolvulus Hawk-moth
 69.005 *Acherontia atropos* (Linnaeus, 1758) Death's-head Hawk-moth
 69.008 *Hemaris tityus* (Linnaeus, 1758) Narrow-bordered Bee Hawk-moth
 69.010 *Macroglossum stellatarum* (Linnaeus, 1758) Humming-bird Hawk-moth
 69.015 *Hyles livornica* (Esper, [1804]) Striped Hawk-moth
 69.016 *Deilephila elpenor* (Linnaeus, 1758) Elephant Hawk-moth
 69.017 *Deilephila porcellus* (Linnaeus, 1758) Small Elephant Hawk-moth

GEOMETRIDAE

- 70.009 *Idaea subsericeata* (Haworth, 1809) Satin Wave
 70.011 *Idaea dimidiata* (Hufnagel, 1767) Single-dotted Wave
 70.013 *Idaea biselata* (Hufnagel, 1767) Small Fan-footed Wave
 70.016 *Idaea aversata* (Linnaeus, 1758) Riband Wave
 70.023 *Scopula marginepunctata* (Goeze, 1781) Mullein Wave
 70.024 *Scopula imitaria* (Hübner, [1799]) Small Blood-vein
 70.025 *Scopula immutata* (Linnaeus, 1758) Lesser Cream Wave
 70.027 *Scopula floslactata* (Haworth, 1809) Cream Wave
 70.028 *Scopula emutaria* (Hübner, [1809]) Rosy Wave +
 70.029 *Timandra comae* Schmidt, 1931 Blood-vein
 70.033 *Cyclophora puppillaria* (Hübner, [1799]) Blair's Mocha +
 70.036 *Cyclophora punctaria* (Linnaeus, 1758) Maiden's Blush +
 70.037 *Cyclophora linearia* (Hübner, [1799]) Clay Triple-lines +
 70.038 *Rhodometra sacraria* (Linnaeus, 1767) Vestal +
 70.040 *Scotopteryx mucronata* (Scopoli, 1763) Lead Belle

- 70.041 *Scotopteryx luridata* (Hufnagel, 1767) July Belle
- 70.045 *Scotopteryx chenopodiata* (Linnaeus, 1758) Shaded Broad-bar
- 70.046 *Orthonama vittata* (Borkhausen, 1794) Oblique Carpet
- 70.047 *Nyctosea obstipata* (Fabricius, 1794) Gem
- 70.049 *Xanthorhoe fluctuata* (Linnaeus, 1758) Garden Carpet
- 70.051 *Xanthorhoe spadicearia* ([Denis & Schiffermüller], 1775) Red Twin-spot Carpet +
- 70.052 *Xanthorhoe ferrugata* (Clerck, 1759) Dark-barred Twin-spot Carpet
- 70.053 *Xanthorhoe designata* (Hufnagel, 1767) Flame Carpet
- 70.054 *Xanthorhoe montanata* ([Denis & Schiffermüller], 1775) Silver-ground Carpet
- 70.059 *Camptogramma bilineata* (Linnaeus, 1758) Yellow Shell
- 70.060 *Epirrhoe tristata* (Linnaeus, 1758) Small Argent & Sable
- 70.061 *Epirrhoe alternata* (Müller, 1764) Common Carpet
- 70.063 *Epirrhoe galiata* ([Denis & Schiffermüller], 1775) Galium Carpet
- 70.064 *Euphyia biangulata* (Haworth, 1809) Cloaked Carpet
- 70.065 *Euphyia unangulata* (Haworth, 1809) Sharp-angled Carpet
- 70.066 *Earophila badiata* ([Denis & Schiffermüller], 1775) Shoulder Stripe
- 70.067 *Anticlea derivata* ([Denis & Schiffermüller], 1775) Streamer
- 70.068 *Mesoleuca albicillata* (Linnaeus, 1758) Beautiful Carpet
- 70.069 *Pelurga comitata* (Linnaeus, 1758) Dark Spinach +
- 70.074 *Hydriomena furcata* (Thunberg, 1784) July Highflyer
- 70.075 *Hydriomena impluviata* ([Denis & Schiffermüller], 1775) May Highflyer +
- 70.076 *Hydriomena ruberata* (Freyer, [1831]) Ruddy Highflyer
- 70.077 *Pennithera firmata* (Hübner, [1822]) Pine Carpet +
- 70.079 *Thera britannica* (Turner, 1925) Spruce Carpet
- 70.081 *Thera obeliscata* (Hübner, [1787]) Grey Pine Carpet
- 70.084 *Plemyria rubiginata* ([Denis & Schiffermüller], 1775) Blue-bordered Carpet
- 70.085 *Cidaria fulvata* (Forster, 1771) Barred Yellow
- 70.086 *Electrophaes corylata* (Thunberg, 1792) Broken-barred Carpet
- 70.087 *Cosmorhoe ocellata* (Linnaeus, 1758) Purple Bar
- 70.089 *Eulithis prunata* (Linnaeus, 1758) Pheonix +
- 70.090 *Eulithis testata* (Linnaeus, 1761) Chevron
- 70.091 *Eulithis populata* (Linnaeus, 1758) Northern Spinach
- 70.093 *Gandaritis pyraliata* ([Denis & Schiffermüller], 1775) Barred Straw
- 70.094 *Ecliptopera silaceata* ([Denis & Schiffermüller], 1775) Small Pheonix
- 70.095 *Chloroclysta siterata* (Hufnagel, 1767) Red-green Carpet
- 70.096 *Chloroclysta miata* (Linnaeus, 1758) Autumn Green Carpet +
- 70.097 *Dysstroma truncata* (Hufnagel, 1767) Common Marbled Carpet

- 70.098 *Dysstroma citrata* (Linnaeus, 1761) Dark Marbled Carpet
- 70.100 *Colostygia pectinataria* (Knoch, 1781) Green Carpet
- 70.101 *Colostygia multistrigaria* (Haworth, 1809) Mottled Grey
- 70.103 *Lampropteryx suffumata* ([Denis & Schiffermüller], 1775) Water Carpet
- 70.106 *Operophtera brumata* (Linnaeus, 1758) Winter Moth
- 70.107 *Epirrita dilutata* ([Denis & Schiffermüller], 1775) November Moth
- 70.108 *Epirrita christyi* (Allen, 1906) Pale November Moth +
- 70.109 *Epirrita autumnata* (Borkhausen, 1794) Autumnal Moth +
- 70.111 *Asthena albulata* (Hufnagel, 1767) Small White Wave +
- 70.112 *Euchoeca nebulata* (Scopoli, 1763) Dingy Shell +
- 70.115 *Venusia cambrica* Curtis, 1839 Welsh Wave +
- 70.121 *Rheumaptera undulata* (Linnaeus, 1758) Scallop Shell
- 70.130 *Odezia atrata* (Linnaeus, 1758) Chimney Sweeper
- 70.131 *Mesotype didymata* (Linnaeus, 1758) Twin-spot Carpet
- 70.133 *Perizoma alchemillata* (Linnaeus, 1758) Small Rivulet
- 70.134 *Perizoma bifaciata* (Haworth, 1809) Barred Rivulet
- 70.137 *Perizoma albulata* ([Denis & Schiffermüller], 1775) Grass Rivulet
- 70.138 *Perizoma flavofasciata* (Thunberg, 1792) Sandy Carpet +
- 70.141 *Gymnoscelis rufifasciata* (Haworth, 1809) Double-striped Pug
- 70.142 *Chloroclystis v-ata* (Haworth, 1809) V-Pug
- 70.144 *Pasiphila rectangulata* (Linnaeus, 1758) Green Pug
- 70.145 *Pasiphila debiliata* (Hübner, [1817]) Bilberry Pug
- 70.146 *Eupithecia haworthiata* Doubleday, 1856 Haworth's Pug +
- 70.147 *Eupithecia tenuiata* (Hübner, [1813]) Slender Pug
- 70.149 *Eupithecia abietaria* (Goeze, 1781) Cloaked Pug +
- 70.151 *Eupithecia pulchellata* Stephens, 1831 Foxglove Pug +
- 70.155 *Eupithecia venosata* (Fabricius, 1787) Netted Pug
- 70.156 *Eupithecia abbreviata* Stephens, 1831 Brindled Pug
- 70.157 *Eupithecia dodoneata* Guenée, [1858] Oak-tree Pug +
- 70.160 *Eupithecia tripunctaria* Herrich-Schäffer, 1852 White-spotted Pug
- 70.161 *Eupithecia virgaureata* Doubleday, 1861 Golden-rod Pug +
- 70.162 *Eupithecia tantillaria* Boisduval, 1840 Dwarf Pug +
- 70.163 *Eupithecia lariciata* (Freyer, 1841) Larch Pug +
- 70.166 *Eupithecia simpliciatata* (Haworth, 1809) Plain Pug
- 70.168 *Eupithecia nanata* (Hübner, [1813]) Narrow-winged Pug
- 70.169 *Eupithecia innotata* (Hufnagel, 1767) Angle-barred Pug +
- 70.171 *Eupithecia indigata* (Hübner, [1813]) Ochreous Pug +

- 70.172 *Eupithecia distinctaria* Herrich-Schäffer, 1848 Thyme Pug +
- 70.173 *Eupithecia centaureata* ([Denis & Schiffermüller], 1775) Lime-speck Pug
- 70.177 *Eupithecia satyrata* (Hübner, [1813]) Satyr Pug +
- 70.179 *Eupithecia absinthiata* (Clerck, 1759) Wormwood Pug
- 70.182 *Eupithecia assimolata* Doubleday, 1856 Currant Pug +
- 70.183 *Eupithecia vulgata* (Haworth, 1809) Common Pug
- 70.184 *Eupithecia exigua* (Hübner, [1813]) Mottled Pug +
- 70.189 *Eupithecia subumbrata* ([Denis & Schiffermüller], 1775) Shaded Pug
- 70.190 *Eupithecia subfuscata* (Haworth, 1809) Grey Pug
- 70.192 *Aplocera plagiata* (Linnaeus, 1758) Treble-bar
- 70.198 *Lobophora halterata* (Hufnagel, 1767) Seraphim +
- 70.200 *Acasis viretata* (Hübner, [1799]) Yellow-barred Brindle
- 70.202 *Trichopteryx carpinata* (Borkhausen, 1794) Early Tooth-striped +
- 70.205 *Abraxas grossulariata* (Linnaeus, 1758) Magpie
- 70.206 *Abraxas sylvata* (Scopoli, 1763) Clouded Magpie +
- 70.207 *Lomaspilis marginata* (Linnaeus, 1758) Clouded Border
- 70.208 *Ligdia adustata* ([Denis & Schiffermüller], 1775) Scorched Carpet +
- 70.212 *Macaria alternata* ([Denis & Schiffermüller], 1775) Sharp-angled Peacock +
- 70.214 *Macaria liturata* (Clerck, 1759) Tawny-barred Angle
- 70.218 *Chiasmia clathrata* (Linnaeus, 1758) Latticed Heath
- 70.221 *Cepphis advenaria* (Hübner, 1790) Little Thorn +
- 70.222 *Petrophora chlorosata* (Scopoli, 1763) Brown Silver-line
- 70.223 *Plagodis pulveraria* (Linnaeus, 1758) Barred Umber +
- 70.224 *Plagodis dolabraria* (Linnaeus, 1767) Scorched Wing
- 70.226 *Opisthograptis luteolata* (Linnaeus, 1758) Brimstone Moth
- 70.227 *Epione repandaria* (Hufnagel, 1767) Bordered Beauty
- 70.229 *Pseudopanthera macularia* (Linnaeus, 1758) Speckled Yellow
- 70.230 *Angerona prunaria* (Linnaeus, 1758) Orange Moth
- 70.231 *Apeira syringaria* (Linnaeus, 1758) Lilac Beauty
- 70.233 *Ennomos quercinaria* (Hufnagel, 1767) August Thorn
- 70.234 *Ennomos alniaria* (Linnaeus, 1758) Canary-shouldered Thorn
- 70.237 *Selenia dentaria* (Fabricius, 1775) Early Thorn
- 70.240 *Odontopera bidentata* (Clerck, 1759) Scalloped Hazel
- 70.241 *Crocallis elinguarua* (Linnaeus, 1758) Scalloped Oak
- 70.243 *Ourapteryx sambucaria* (Linnaeus, 1758) Swallow-tailed Moth
- 70.244 *Colotois pennaria* (Linnaeus, 1761) Feathered Thorn
- 70.245 *Alsophila aescularia* ([Denis & Schiffermüller], 1775) March Moth

- 70.247 *Phigalia pilosaria* ([Denis & Schiffermüller], 1775) Pale Brindled Beauty +
 70.251 *Biston strataria* (Hufnagel, 1767) Oak Beauty +
 70.252 *Biston betularia* (Linnaeus, 1758) Peppered Moth
 70.253 *Agriopis leucophaearia* ([Denis & Schiffermüller], 1775) Spring Usher +
 70.254 *Agriopis aurantiaria* (Hübner, [1799]) Scarce Umber +
 70.255 *Agriopis marginaria* (Fabricius, [1777]) Dotted Border
 70.256 *Erannis defoliaria* (Clerck, 1759) Mottled Umber +
 70.258 *Peribatodes rhomboidaria* ([Denis & Schiffermüller], 1775) Willow Beauty
 70.262 *Selidosema brunnearia* (Villers, 1789) Bordered Grey +
 70.263 *Cleora cinctaria* ([Denis & Schiffermüller], 1775) Ringed Carpet +
 70.264 *Deileptenia ribeata* (Clerck, 1759) Satin Beauty
 70.265 *Alcis repandata* (Linnaeus, 1758) Mottled Beauty
 70.270 *Ectropis crepuscularia* ([Denis & Schiffermüller], 1775) Engrailed
 70.272 *Paradarisa consonaria* (Hübner, [1799]) Square Spot +
 70.274 *Aethalura punctulata* ([Denis & Schiffermüller], 1775) Grey Birch +
 70.275 *Ematurga atomaria* (Linnaeus, 1758) Common Heath
 70.276 *Bupalus piniaria* (Linnaeus, 1758) Bordered White
 70.277 *Cabera pusaria* (Linnaeus, 1758) Common White Wave
 70.278 *Cabera exanthemata* (Scopoli, 1763) Common Wave
 70.279 *Lomographa bimaculata* (Fabricius, 1775) White-pinion Spotted +
 70.280 *Lomographa temerata* ([Denis & Schiffermüller], 1775) Clouded Silver
 70.282 *Theria primaria* (Haworth, 1809) Early Moth +
 70.283 *Campaea margaritaria* (Linnaeus, 1761) Light Emerald
 70.284 *Hylaea fasciaria* (Linnaeus, 1758) Barred Red
 70.287 *Charissa obscurata* ([Denis & Schiffermüller], 1775) Annulet
 70.288 *Cleorodes lichenaria* (Hufnagel, 1767) Brussels Lace
 70.295 *Perconia strigillaria* (Hübner, [1787]) Grass Wave
 70.297 *Pseudoterpna pruinata* (Hufnagel, 1767) Grass Emerald
 70.299 *Geometra papilionaria* (Linnaeus, 1758) Large Emerald
 70.303 *Jodis lactearia* (Linnaeus, 1758) Little Emerald
 70.305 *Hemithea aestivaria* (Hübner, 1789) Common Emerald

NOTODONTIDAE

- 71.003 *Cerura vinula* (Linnaeus, 1758) Puss Moth +
 71.005 *Furcula furcula* (Clerck, 1759) Sallow Kitten +
 71.011 *Drymonia ruficornis* (Hufnagel, 1766) Lunar Marbled Brown +
 71.012 *Notodonta dromedarius* (Linnaeus, 1767) Iron Prominent
 71.013 *Notodonta ziczac* (Linnaeus, 1758) Pebble Prominent

- 71.017 *Pheosia tremula* (Clerck, 1759) Swallow Prominent +
- 71.018 *Pheosia gnoma* (Fabricius, [1777]) Lesser Swallow Prominent +
- 71.020 *Pterostoma palpina* (Clerck, 1759) Pale Prominent
- 71.021 *Ptilodon capucina* (Linnaeus, 1758) Coxcomb Prominent
- 71.023 *Odontosia carmelita* (Esper, [1798]) Scarce Prominent +
- 71.025 *Phalera bucephala* (Linnaeus, 1758) Buff-tip

EREBIDAE

- 72.001 *Scoliopteryx libatrix* (Linnaeus, 1758) Herald
- 72.002 *Rivula sericealis* (Scopoli, 1763) Straw Dot
- 72.003 *Hypena proboscidalis* (Linnaeus, 1758) Snout
- 72.006 *Hypena obsitalis* (Hübner, [1813]) Bloxworth Snout +
- 72.007 *Hypena crassalis* (Fabricius, 1787) Beautiful Snout
- 72.015 *Calliteara pudibunda* (Linnaeus, 1758) Pale Tussock
- 72.017 *Orgyia antiqua* (Linnaeus, 1758) Vapourer
- 72.019 *Spilosoma lutea* (Hufnagel, 1766) Buff Ermine
- 72.020 *Spilosoma lubricipeda* (Linnaeus, 1758) White Ermine
- 72.022 *Diaphora mendica* (Clerck, 1759) Muslin Moth
- 72.023 *Diacrisia sannio* (Linnaeus, 1758) Clouded Buff
- 72.024 *Phragmatobia fuliginosa* (Linnaeus, 1758) Ruby Tiger
- 72.026 *Arctia caja* (Linnaeus, 1758) Garden Tiger
- 72.031 *Tyria jacobaeae* (Linnaeus, 1758) Cinnabar
- 72.034 *Utetheisa pulchella* (Linnaeus, 1758) Crimson Speckled
- 72.035 *Mitochrista miniata* (Forster, 1771) Rosy Footman
- 72.036 *Nudaria mundana* (Linnaeus, 1761) Muslin Footman
- 72.037 *Thumatha senex* (Hübner, [1808]) Round-winged Muslin
- 72.041 *Lithosia quadra* (Linnaeus, 1758) Four-spotted Footman
- 72.042 *Atolmis rubicollis* (Linnaeus, 1758) Red-necked Footman
- 72.043 *Eilema depressa* (Esper, 1787) Buff Footman +
- 72.044 *Eilema griseola* (Hübner, [1803]) Dingy Footman +
- 72.045 *Eilema lurideola* (Zincken, 1817) Common Footman
- 72.046 *Eilema complana* (Linnaeus, 1758) Scarce Footman
- 72.047 *Eilema caniola* (Hübner, [1808]) Hoary Footman
- 72.049 *Eilema sororcula* (Hufnagel, 1766) Orange Footman +
- 72.053 *Herminia tarsipennalis* Treitschke, 1835 Fan-foot
- 72.055 *Herminia grisealis* ([Denis & Schiffermüller], 1775) Small Fan-foot
- 72.060 *Hypenodes humidalis* Doubleday, 1850 Marsh Oblique-barred +
- 72.061 *Schrankia costaeistrigalis* (Stephens, 1834) Pinion-streaked Snout

- 72.067 *Phytometra viridaria* (Clerck, 1759) Small Purple-barred
- 72.073 *Eublemma parva* (Hübner, [1808]) Small Marbled +
- 72.076 *Catocala fraxini* (Linnaeus, 1758) Clifden Nonpareil +
- 72.078 *Catocala nupta* (Linnaeus, 1767) Red Underwing +
- 72.083 *Euclidia glyphica* (Linnaeus, 1758) Burnet Companion +
- 72.084 *Callistegi mi* (Clerck, 1759) Mother Shipton

NOCTUIDAE

- 73.001 *Abrostola tripartita* (Hufnagel, 1766) Spectacle
- 73.002 *Abrostola triplasia* (Linnaeus, 1758) Dark Spectacle
- 73.003 *Trichoplusia ni* (Hübner, [1803]) Ni Moth +
- 73.004 *Thysanoplusia orichalcea* (Fabricius, 1775) Slender Burnished Brass +
- 73.0041 *Thysanoplusia daubei* (Boisduval, 1840) Boathouse Gem +
- 73.008 *Chrysodeixis chalcites* (Esper, [1803]) Golden Twin-spot +
- 73.009 *Chrysodeixis acuta* (Walker, 1857) Tunbridge Wells Gem +
- 73.012 *Diachrysia chrysitis* (Linnaeus, 1758) Burnished Brass
- 73.015 *Autographa gamma* (Linnaeus, 1758) Silver Y
- 73.016 *Autographa pulchrina* (Haworth, 1809) Beautiful Golden Y
- 73.017 *Autographa jota* (Linnaeus, 1758) Plain Golden Y
- 73.018 *Autographa bractea* ([Denis & Schiffermüller], 1775) Gold Spangle
- 73.021 *Syngrapha interrogationis* (Linnaeus, 1758) Scarce Silver Y
- 73.022 *Plusia festucae* (Linnaeus, 1758) Gold Spot
- 73.024 *Protodeltote pygarga* (Hufnagel, 1766) Marbled White Spot
- 73.032 *Colocasia coryli* (Linnaeus, 1758) Nut-tree Tussock
- 73.036 *Acronicta alni* (Linnaeus, 1767) Alder Moth +
- 73.038 *Acronicta psi* (Linnaeus, 1758) Grey Dagger
- 73.040 *Acronicta leporina* (Linnaeus, 1758) Miller
- 73.045 *Acronicta rumicis* (Linnaeus, 1758) Knot Grass
- 73.046 *Acronicta megacephala* ([Denis & Schiffermüller], 1775) Poplar Grey
- 73.047 *Craniophora ligustri* ([Denis & Schiffermüller], 1775) Coronet +
- 73.052 *Cucullia umbratica* (Linnaeus, 1758) Shark
- 73.0527 *Cucullia calendulae* Treitschke, 1835 Marigold Shark +
- 73.053 *Cucullia chamomillae* ([Denis & Schiffermüller], 1775) Chamomile Shark
- 73.061 *Stilbia anomala* (Haworth, 1812) Anomalous
- 73.062 *Amphipyra pyramidea* (Linnaeus, 1758) Copper Underwing
- 73.064 *Amphipyra tragopoginis* (Clerck, 1759) Mouse Moth
- 73.065 *Asteroscopus sphinx* (Hufnagel, 1766) Sprawler
- 73.068 *Allophyes oxyacanthae* (Linnaeus, 1758) Green-brindled Crescent

- 73.069 *Xylocampa areola* (Esper, 1789) Early Grey
- 73.070 *Pyrrhia umbra* (Hufnagel, 1766) Bordered Sallow
- 73.074 *Heliothis peltigera* ([Denis & Schiffermüller], 1775) Bordered Straw +
- 73.076 *Helicoverpa armigera* (Hübner, [1808]) Scarce Bordered Straw +
- 73.085 *Bryopsis muralis* (Forster, 1771) Marbled Green
- 73.087 *Spodoptera exigua* (Hübner, [1808]) Small Mottled Willow
- 73.088 *Spodoptera cilium* Guenée, 1852 Dark Mottled Willow +
- 73.092 *Caradrina morpheus* (Hufnagel, 1766) Mottled Rustic +
- 73.095 *Caradrina clavipalpis* (Scopoli, 1763) Pale Mottled Willow +
- 73.096 *Hoplodrina octogenaria* (Goeze, 1781) Uncertain
- 73.097 *Hoplodrina blanda* ([Denis & Schiffermüller], 1775) Rustic
- 73.099 *Hoplodrina ambigua* ([Denis & Schiffermüller], 1775) Vine's Rustic +
- 73.100 *Chilodes maritima* (Tauscher, 1806) Silky Wainscot +
- 73.101 *Charanyca trigrammica* (Hufnagel, 1766) Treble Lines +
- 73.102 *Rusina ferruginea* (Esper, 1785) Brown Rustic
- 73.107 *Mormo maura* (Linnaeus, 1758) Old Lady +
- 73.109 *Thalpophila matura* (Hufnagel, 1766) Straw Underwing
- 73.113 *Phlogophora meticulosa* (Linnaeus, 1758) Angle Shades
- 73.114 *Euplexia lucipara* (Linnaeus, 1758) Small Angle Shades
- 73.118 *Celaena haworthii* (Curtis, 1829) Haworth's Minor
- 73.119 *Helotropha leucostigma* (Hübner, [1808]) Crescent
- 73.121 *Gortyna flavago* ([Denis & Schiffermüller], 1775) Frosted Orange
- 73.123 *Hydraecia micacea* (Esper, 1789) Rosy Rustic
- 73.126 *Amphipoea fucosa* (Freyer, 1830) Saltern Ear +
- 73.127 *Amphipoea lucens* (Freyer, 1845) Large Ear
- 73.128 *Amphipoea oculatea* (Linnaeus, 1761) Ear Moth
- 73.129 *Amphipoea crinanensis* (Burrows, 1908) Crinan Ear +
- 73.131 *Luperina testacea* ([Denis & Schiffermüller], 1775) Flounced Rustic
- 73.134 *Rhizedra lutosa* (Hübner, [1803]) Large Wainscot
- 73.136 *Nonagria typhae* (Thunberg, 1784) Bulrush Wainscot +
- 73.139 *Lenisa geminipuncta* (Haworth, 1809) Twin-spotted Wainscot +
- 73.141 *Archanara dissoluta* (Treitschke, 1825) Brown-veined Wainscot +
- 73.142 *Coenobia rufa* (Haworth, 1809) Small Rufous
- 73.144 *Denticucullus pygmina* (Haworth, 1809) Small Wainscot
- 73.147 *Photodes minima* (Haworth, 1809) Small Dotted Buff
- 73.154 *Apamea remissa* (Hübner, [1809]) Dusky Brocade
- 73.155 *Apamea epomidion* (Haworth, 1809) Clouded Brindle

- 73.156 *Apamea crenata* (Hufnagel, 1766) Clouded-bordered Brindle
- 73.158 *Apamea sordens* (Hufnagel, 1766) Rustic Shoulder-knot +
- 73.159 *Apamea unanimitis* (Hübner, [1813]) Small Clouded Brindle +
- 73.162 *Apamea monoglypha* (Hufnagel, 1766) Dark Arches
- 73.163 *Apamea lithoxyla* ([Denis & Schiffermüller], 1775) Light Arches
- 73.165 *Apamea furva* ([Denis & Schiffermüller], 1775) Confused
- 73.168 *Lateroligia ophiogramma* (Esper, 1794) Double Lobed
- 73.169 *Mesapamea secalis* (Linnaeus, 1758) Common Rustic
- 73.170 *Mesapamea didyma* (Esper, 1788) Lesser Common Rustic +
- 73.171 *Litoligia literosa* (Haworth, 1809) Rosy Minor
- 73.172 *Mesoligia furuncula* ([Denis & Schiffermüller], 1775) Cloaked Minor
- 73.174 *Oligia latruncula* ([Denis & Schiffermüller], 1775) Tawny Marbled Minor
- 73.175 *Oligia versicolor* (Borkhausen, 1792) Rufous Minor
- 73.176 *Oligia fasciuncula* (Haworth, 1809) Middle-barred Minor
- 73.179 *Tiliacea citrigo* (Linnaeus, 1758) Orange Sallow +
- 73.181 *Xanthia togata* (Esper, 1788) Pink-barred Sallow
- 73.182 *Cirrhia icteritia* (Hufnagel, 1766) Sallow
- 73.186 *Agrochola lychnidis* ([Denis & Schiffermüller], 1775) Beaded Chestnut +
- 73.188 *Anchoscelis helvola* (Linnaeus, 1758) Flounced Chestnut
- 73.189 *Leptologia lota* (Clerck, 1759) Red-line Quaker
- 73.190 *Leptologia macilenta* (Hübner, [1809]) Yellow-line Quaker +
- 73.192 *Sunira circellaris* (Hufnagel, 1766) Brick +
- 73.193 *Anchoscelis lunosa* (Haworth, 1809) Lunar Underwing
- 73.194 *Conistra vaccinii* (Linnaeus, 1761) Chestnut
- 73.195 *Conistra ligula* (Esper, 1791) Dark Chestnut +
- 73.200 *Lithophane semibrunnea* (Haworth, 1809) Tawny Pinion +
- 73.201 *Lithophane socia* (Hufnagel, 1766) Pale Pinion
- 73.202 *Lithophane ornitopus* (Hufnagel, 1766) Grey Shoulder-knot
- 73.206 *Lithophane leautieri* (Boisduval, 1829) Blair's Shoulder-knot +
- 73.208 *Xylota exsoleta* (Linnaeus, 1758) Sword Grass ^{*RE}
- 73.209 *Xylota vetusta* (Hübner, [1813]) Red Sword-grass
- 73.210 *Eupsilia transversa* (Hufnagel, 1766) Satellite
- 73.216 *Cosmia trapezina* (Linnaeus, 1758) Dun-bar
- 73.219 *Atethmia centrago* (Haworth, 1809) Centre-barred Sallow +
- 73.222 *Fissipunctia ypsilon* ([Denis & Schiffermüller], 1775) Dingy Shears +
- 73.224 *Griposia aprilina* (Linnaeus, 1758) Merveille du Jour +
- 73.225 *Dryobotodes eremita* (Fabricius, 1775) Brindled Green +

- 73.228 *Antitype chi* (Linnaeus, 1758) Grey Chi
 73.230 *Aporophyla australis* (Boisduval, 1829) Feathered Brindle
 73.233 *Aporophyla nigra* (Haworth, 1809) Black Rustic
 73.234 *Dasypolia templi* (Thunberg, 1792) Brindled Ochre +
 73.235 *Polymixis lichenea* (Hübner, [1813]) Feathered Ranunculus +
 73.238 *Mniotype adusta* (Esper, 1790) Dark Brocade
 73.241 *Panolis flammea* ([Denis & Schiffermüller], 1775) Pine Beauty
 73.242 *Orthosia incerta* (Hufnagel, 1766) Clouded Drab +
 73.244 *Orthosia cerasi* (Fabricius, 1775) Common Quaker
 73.245 *Orthosia cruda* ([Denis & Schiffermüller], 1775) Small Quaker
 73.247 *Orthosia gracilis* ([Denis & Schiffermüller], 1775) Powdered Quaker
 73.249 *Orthosia gothica* (Linnaeus, 1758) Hebrew Character
 73.250 *Anorthoa munda* ([Denis & Schiffermüller], 1775) Twin-spotted Quaker
 73.252 *Tholera cespitis* ([Denis & Schiffermüller], 1775) Hedge Rustic
 73.253 *Tholera decimalis* (Poda, 1761) Feathered Gothic
 73.254 *Cerapteryx graminis* (Linnaeus, 1758) Antler Moth
 73.255 *Anarta trifolii* (Hufnagel, 1766) Nutmeg +
 73.257 *Anarta myrtilli* (Linnaeus, 1761) Beautiful Yellow Underwing
 73.259 *Polia bombycina* (Hufnagel, 1766) Pale Shining Brown ^{*RE}
 73.261 *Polia nebulosa* (Hufnagel, 1766) Grey Arches
 73.264 *Lacanobia thalassina* (Hufnagel, 1766) Pale-shouldered Brocade
 73.266 *Lacanobia suasa* ([Denis & Schiffermüller], 1775) Dog's Tooth
 73.267 *Lacanobia oleracea* (Linnaeus, 1758) Bright-line Brown-eye
 73.268 *Lacanobia splendens* (Hübner, [1808]) Splendid Brocade +
 73.270 *Melanchra persicariae* (Linnaeus, 1761) Dot Moth
 73.271 *Ceramica pisi* (Linnaeus, 1758) Broom Moth
 73.272 *Papestra biren* (Goeze, 1781) Glaucous Shears +
 73.273 *Hada plebeja* (Linnaeus, 1761) Shears
 73.274 *Mamestra brassicae* (Linnaeus, 1758) Cabbage Moth
 73.276 *Sideridis rivularis* (Fabricius, 1775) Champion
 73.277 *Sideridis reticulata* (Goeze, 1781) Bordered Gothic
 73.278 *Conisania andalusica* (Staudinger, 1859) Barrett's Marbled Coronet
 73.279 *Hecatera bicolorata* (Hufnagel, 1766) Broad-barred White
 73.281 *Hadena bicruris* (Hufnagel, 1766) Lychnis
 73.285 *Hadena caesia* ([Denis & Schiffermüller], 1775) Grey
 73.286 *Hadena perplexa* ([Denis & Schiffermüller], 1775) Tawny Shears/Pod Lover
 73.288 *Mythimna turca* (Linnaeus, 1761) Double Line +

- 73.290 *Mythimna conigera* ([Denis & Schiffermüller], 1775) Brown-line Bright-eye +
- 73.291 *Mythimna pallens* (Linnaeus, 1758) Common Wainscot
- 73.293 *Mythimna impura* (Hübner, [1808]) Smoky Wainscot
- 73.294 *Mythimna straminea* (Treitschke, 1825) Southern Wainscot +
- 73.295 *Mythimna vitellina* (Hübner, [1808]) Delicate +
- 73.296 *Mythimna unipuncta* (Haworth, 1809) White-speck
- 73.297 *Mythimna albipuncta* ([Denis & Schiffermüller], 1775) White-point +
- 73.298 *Mythimna ferrago* (Fabricius, 1787) Clay
- 73.299 *Mythimna litoralis* (Curtis, 1827) Shore Wainscot
- 73.300 *Mythimna l-album* (Linnaeus, 1767) L-album Wainscot +
- 73.301 *Leucania comma* (Linnaeus, 1761) Shoulder-striped Wainscot +
- 73.304 *Leucania loreyi* (Duponchel, 1827) Cosmopolitan +
- 73.307 *Peridroma saucia* (Hübner, [1808]) Pearly Underwing
- 73.308 *Actebia praecox* (Linnaeus, 1758) Portland Moth
- 73.312 *Euxoa obelisca* ([Denis & Schiffermüller], 1775) Square-spot Dart +
- 73.313 *Euxoa tritici* (Linnaeus, 1761) White-line Dart
- 73.314 *Euxoa nigricans* (Linnaeus, 1761) Garden Dart
- 73.317 *Agrotis exclamationis* (Linnaeus, 1758) Heart & Dart
- 73.319 *Agrotis segetum* ([Denis & Schiffermüller], 1775) Turnip Moth +
- 73.322 *Agrotis vestigialis* (Hufnagel, 1766) Archer's Dart +
- 73.323 *Agrotis ripae* (Hübner, [1823]) Sand Dart
- 73.324 *Agrotis trux* (Hübner, [1824]) Crescent Dart
- 73.327 *Agrotis ipsilon* (Hufnagel, 1766) Dark Sword-grass
- 73.328 *Axylia putris* (Linnaeus, 1761) Flame
- 73.329 *Ochropleura plecta* (Linnaeus, 1761) Flame Shoulder
- 73.330 *Ochropleura leucogaster* (Freyer, [1831]) Radford's Flame Shoulder +
- 73.332 *Diarsia brunnea* ([Denis & Schiffermüller], 1775) Purple Clay
- 73.333 *Diarsia mendica* (Fabricius, 1775) Ingrailed Clay
- 73.334 *Diarsia rubi* (Vieweg, 1790) Small Square-spot
- 73.336 *Cerastis rubricosa* ([Denis & Schiffermüller], 1775) Red Chestnut
- 73.338 *Lycophotia porphyrea* ([Denis & Schiffermüller], 1775) True Lover's Knot
- 73.341 *Standfussiana lucerneae* (Linnaeus, 1758) Northern Rustic
- 73.342 *Noctua pronuba* (Linnaeus, 1758) Large Yellow Underwing
- 73.343 *Noctua fimbriata* (Schreber, 1759) Broad-bordered Yellow Underwing +
- 73.345 *Noctua comes* Hübner, [1813] Lesser Yellow Underwing
- 73.346 *Noctua interjecta* Hübner, [1803] Least Yellow Underwing
- 73.348 *Noctua janthe* (Borkhausen, 1792) Lesser Broad-bordered Yellow Underwing

- 73.351 *Graphiphora augur* (Fabricius, 1775) Double Dart
73.352 *Anaplectoides prasina* ([Denis & Schiffermüller], 1775) Green Arches
73.353 *Xestia baja* ([Denis & Schiffermüller], 1775) Dotted Clay +
73.356 *Xestia agathina* (Duponchel, 1827) Heath Rustic
73.357 *Xestia xanthographa* ([Denis & Schiffermüller], 1775) Square-spot Rustic
73.358 *Xestia sexstrigata* (Haworth, 1809) Six-striped Rustic
73.359 *Xestia c-nigrum* (Linnaeus, 1758) Setaceous Hebrew Character
73.361 *Xestia triangulum* (Hufnagel, 1766) Double Square-spot
73.365 *Eugnorisma glareosa* (Esper, 1788) Autumnal Rustic +
73.368 *Naenia typica* (Linnaeus, 1758) Gothic

NOLIDAE

- 74.004 *Nola confusalis* (Herrich-Schäffer, 1847) Least Black Arches
74.008 *Pseudoips prasinana* (Linnaeus, 1758) Green Silver-lines
74.009 *Nycteola revayana* (Scopoli, 1772) Oak Nycteoline +

APPENDIX

Species removed from the Waterford list

Note. H6 = WD (Waterford) and H7 = ST (South Tipperary)

NEPTICULIDAE

- 4.045 *Stigmella fragariella* (Heyden, 1862) **

This is now recognised as a junior synonym of *Stigmella aurella* (Fabricius, 1775).

- 4.047 *Stigmella splendidissimella* (Herrich-Schäffer, 1855)

This was recorded in the larval stage as a leaf-miner on bramble (*Rubus fruticosus* agg.) which *Stigmella aurella* also mines and as the latter makes a similar mine to *S. splendidissimella* they cannot be reliably separated.

TINEIDAE

- 12.025 *Trichophaga tapetzella* (Linnaeus, 1758) Tapestry Moth

Recorded from hectad S22, exact locality unknown. Erroneously mapped by BCUK Micro-Moth Distribution Maps for WD. ST *per* Beirne (1941).

BUCCULATRICIDAE

- 14.007 *Bucculatrix albedinella* (Zeller, 1839)

Erroneously mapped by BCUK Micro-Moth Distribution Maps for WD and NBDC from S22 Clonmel general area, exact locality unknown.

GRACILLARIIDAE

- 15.034 *Phyllonorycter harrisella* (Linnaeus, 1761)

Erroneously mapped by BCUK Micro-Moth Distribution Maps. The accompanying script “H2, 7 Beirne” would seem to indicate the record was mistakenly attributed to WD instead of

ST.

YPSOLOPHIDAE

17.011 *Ypsolopha ustella* (Clerck, 1759).

Mapped by BCUK Micro-Moth Distribution Maps for WD, but exact locality unknown.

OECOPHORIDAE

28.009 *Endrosis fenestrella* (Scopoli, 1763)

This is one of many junior synonyms for *Endrosis sarcitrella* White-shouldered House-moth. O'Meara erroneously suggests the former is "Now possibly *Monopis fenestrella*, Heyd." he probably meant 12.042 *Monopis fenestratella* (Heyden, 1863), a separate species belonging in the Tineidae family and not on the Irish list.

DEPRESSARIIDAE

32.025 *Agonopterix nanatella* (Stainton, 1849)

Misidentified and not on the Irish checklist.

32.026 *Agonopterix kaekeritziana* (Linnaeus, 1767)

Erroneously mapped by BCUK Micro-Moth Distribution Maps for WD. ST *per* Beirne (1941).

32.038 *Depressaria badiella* (Hübner, 1796)

Erroneously mapped by BCUK Micro-Moth Distribution Maps for WD. ST *per* Beirne (1941).

GELECHIIDAE

35.057 *Metzneria littorella* (Douglas, 1850)

Misidentified and not on the Irish checklist.

ELACHISTIDAE

38.018 *Elachista bisulcella* (Duponchel, [1843])

Recorded from hectad S22, exact locality unknown. Mapped by BCUK Micro-Moth Distribution Maps for ST. ST *per* Beirne (1941).

38.022 *Elachista gleichenella* (Fabricius, 1781)

Mapped by BCUK Micro-Moth Distribution Maps for WD, but no details about the record are known.

TORTRICIDAE

49.018 *Choristoneura hebenstreitella* (Müller, 1764)

Recorded from hectad S22, exact locality unknown. Mapped by BCUK Micro-Moth Distribution Maps for ST. ST *per* Beirne (1941).

49.020 *Argyrotaenia ljunghiana* (Thunberg, 1797)

Recorded from hectad S22, exact locality unknown. Mapped by BCUK Micro-Moth Distribution Maps for ST. ST *per* Beirne (1941).

- 49.065 *Acleris comariana* (Lienig & Zeller, 1846) Strawberry Tortrix
Recorded from hectad S22, exact locality unknown. ST *per* Beirne (1941).
- 49.068 *Acleris maccana* (Treitschke, 1835)
Misidentified and not on the Irish checklist.
- 49.073 *Acleris schalleriana* (Linnaeus, 1761)
Recorded from hectad S22, exact locality unknown.
- 49.090 *Eulia ministrana* (Linnaeus, 1758)
Recorded from hectad S22, exact locality unknown.
- 49.148 *Apotomis lineana* (Denis & Schiffermüller], 1775)
Misidentified and not on the Irish checklist.
- 49.149 *Apotomis turbidana* Hübner, [1825]
Recorded from hectad S22, exact locality unknown.
- 49.184 *Lobesia reliquana* (Hübner, [1825])
Recorded from hectad S22, exact locality unknown. Mapped by BCUK Micro-Moth Distribution Maps for ST. ST *per* Beirne (1941).
- 49.189 *Endothenia pullana* (Haworth, 1811)
Misidentified and not on the Irish checklist.
- 49.202 *Ancylis uncella* ([Denis & Schiffermüller], 1775)
Recorded from hectad S22, exact locality unknown.
- 49.211 *Ancylis myrtillana* (Treitschke, 1830)
Recorded from hectad S22, exact locality unknown.
- 49.216 *Ancylis mitterbacheriana* ([Denis & Schiffermüller], 1775)
Recorded from hectad S22, exact locality unknown.
- 49.221 *Rhopobota stagnana* ([Denis & Schiffermüller], 1775)
Recorded from hectad S22, exact locality unknown.
- 49.245 *Epinotia tetraquetra* (Haworth, 1811)
Recorded from hectad S22, exact locality unknown.
- 49.251 *Epinotia rubiginosana* (Herrich-Schäffer, 1851)
Recorded from hectad S22, exact locality unknown. O'Meara (2001) also listed the former as *Epinotia* "*rubigosana*". Having misspelt the specific name, perhaps he thought it to be a separate species.
- 49.290 *Epiblema turbidana* (Treitschke, 1835)
Recorded from hectad S22, exact locality unknown. Mapped by BCUK Micro-Moth Distribution Maps for ST. ST *per* Beirne (1941).

PIERIDAE

- 58.001 *Leptidea sinapis* (Linnaeus, 1758) Wood White
This butterfly is only found in Counties Clare and Galway.

58.011 *Colias hyale* (Linnaeus, 1758) Pale Clouded Yellow

This species is easily confused with the Clouded Yellow f. *helice* (Hübner, 1799). There are no confirmed records and it is not on the Irish checklist. (see Bond *et al.*, 2006).

PYRALIDAE

62.002 *Melissoblaptes zelleri*, (Joannis, 1932)

Now *Aphomia zelleri* (Joannis, 1932) misidentified and not on the Irish checklist.

62.038 *Acrobasis consociella* (Hübner, [1813])

Recorded from hectad S22, exact locality unknown.

62.074 *Aglossa pinguinalis* (Linnaeus, 1758) Large Tabby

Recorded from hectad S22, exact locality unknown. Mapped by BCUK Micro-Moth Distribution Maps for ST. ST *per* Beirne (1941).

CRAMBIDAE

63.085 *Crambus pratella* (Linnaeus, 1758)

Misidentified and not on the Irish checklist.

DREPANIDAE

65.001 *Falcaria lacertinaria* (Linnaeus, 1758) Scalloped Hook-tip

Recorded from hectad S22, exact locality unknown.

GEOMETRIDAE

70.018 *Idaea straminata* (Borkhausen, 1794) Plain Wave

A scarce species in Ireland and possibly misidentified for the similar Riband Wave f. *remutata* (Linnaeus, 1758), confirmation would be desirable.

70.026 *Scopula ternata* Schrank, 1802 Smoky Wave

An extremely rare moth in Ireland and likely to have been misidentified.

70.092 *Eulithis mellinata* (Fabricius, 1787) Spinach

Doubtfully ever resident and only known as a suspected adventive.

70.124 *Pareulype berberata* ([Denis and Schiffermüller], 1775) Barberry Carpet ^{*RE}

S22 Clonmel general area.

70.154 *Eupithecia pygmaea* (Hübner, [1799]) Marsh Pug

Recorded from hectad S22, exact locality unknown.

70.165 *Eupithecia pimpinellata* (Hübner, [1813]) Pimpinell Pug

Recorded from hectad S22 and Waterford City by O'Meara (2001), confirmation would be desirable.

70.185 *Eupithecia denotata* (Hübner, [1813]) Campanula Pug

Recorded from Waterford City by O'Meara (2001), confirmation would be desirable.

70.215 *Macaria wauaria* (Linnaeus, 1758) V-Moth ^{*RE}

S22 Clonmel general area.

70.236 *Ennomos erosaria* ([Denis & Schiffermüller], 1775) September Thorn ^{*RE}

A record by E. J. Pilcher from Clonmel and others by Michael O'Meara from Waterford City are erroneous. There are old records from Counties Dublin and Kildare.

70.293 *Aspitates gilvaria* ([Denis & Schiffermüller], 1775) Straw Belle

This moth is only known from Counties Clare, Galway and Mayo.

NOTODONTIDAE

71.028 *Clostera pigra* (Hufnagel, 1766) Small Chocolate-tip

Murray 'reared' 11 specimens, however, it is not known where the larvae or eggs were taken. Therefore, confirmation would be desirable.

NOCTUIDAE

73.026 *Deltote uncula* (Clerck, 1759) Silver Hook

Recorded from hectad S22, exact locality unknown.

73.084 *Bryophila domestica* (Hufnagel, 1766) Marbled Beauty

Recorded from hectad S22, exact locality unknown.

73.161 *Apamea oblonga* (Haworth, 1809) Crescent Striped

Baynes (1964) mentions Birchall (1866-1867) recorded this as "Abundant on the coast near Waterford", going on to express an element of doubt about the record, that doubt remains.

73.173 *Oligia strigilis* (Linnaeus, 1758) Marbled Minor

Recorded by O'Meara (2001). One of a complex of three species (Marbled Minor, Rufous Minor and Tawny Marbled Minor), which can only be reliably separated by dissection, therefore, confirmation would be desirable.

73.243 *Orthosia miniosa* ([Denis & Schiffermüller], 1775) Blossom Underwing ^{*RE}

S22 Clonmel general area. The last Irish record was from Co. Wicklow in 1961.

73.283 *Hadena confusa* (Hufnagel, 1766) Marbled Coronet

Possibly resident, but awaiting confirmation.

73.320 *Agrotis clavis* (Hufnagel, 1766) Heart & Club

Records from Kilmacthomas and Waterford City by O'Meara (2001) are doubtful, therefore, confirmation would be desirable.

Acknowledgements

I would like to thank the following without whose help this checklist would not have been as comprehensive. Ken Bond who kindly confirmed and determined numerous species for the author and assisted with the checklist. Also, the late John Langmaid, Andy Banthorpe, and Rob Edmunds for confirming leaf-miners over the years and Dave Allen. Michael O'Donnell of MothsIreland for their county list for comparison. Jim O'Connor for his valued assistance and guidance with the checklist. Paul Walsh for our years compiling the Migration reports for Tramore Bay and Michael O'Meara for his inspiration.

References

- Agassiz, D. J. L. (1996) Yponomeutidae. Pp 39-114, plate 11. In Emmet, A. M. (ed.) *The moths and butterflies of Great Britain and Ireland*. **3**. Harley Books, Colchester. (Glyptopterigidae included).
- Agassiz, D. J. L., Beavan, S. D. and Heckford, R. J., (2024) *A checklist of the Lepidoptera of the British Isles*. Second edition. BENHS, Dinton Pastures.
- Allen, D., O'Donnell, M., Nelson, B., Tyner, A., Bond, K. G. M., Bryant, T., Crory, A., Mellon, C., O'Boyle, J., O'Donnell, E., Rolston, T., Sheppard, R., Strickland, P., Fitzpatrick, U, and Regan, E. (2016) *Ireland Red List No. 9: Macro-moths (Lepidoptera)*. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.
- Bailey, K. E. J., Baker, R. R., Brakefield, P. M., Bretherton, R. F., Emmet, A. M., Lear, N. W., Melling, T., Pollard, E., Porter, K. J., Pratt, C. R., Shreeve, T. G., Warren, M. S., Willmott, K. J. and Wilson, A. (1989) Nymphalidae. Pp 180-285. In Emmet, A. M. and Heath, J. (eds) *The moths and butterflies of Great Britain and Ireland*. **7**(1). *Hesperiidae-Nymphalidae. The butterflies*. Harley Books, Colchester. (Literature references for British and Irish butterflies are given on pp 286-301).
- Baker, B. R. (1985) Sesiidae. Pp 369-388. In Heath, J. and Emmet, A. M. (eds) *The moths and butterflies of Great Britain and Ireland*. **2**. *Cossidae-Heliodinidae*. Harley Books, Colchester.
- Baynes, E. S. A. (1964) *A revised catalogue of Irish Macrolepidoptera (Butterflies and moths)*. E. W. Classey, Middlesex.
- Baynes, E. S. A. (1970) *Supplement to a revised catalogue of Irish Macrolepidoptera (butterflies and moths)*. E. W. Classey, Middlesex.
- Beirne, B. P. (1941) A list of the Microlepidoptera of Ireland. *Proceedings of the Royal Irish Academy* **47B**: 53-147.
- Beirne, B. P. (1942) 'A list of the Microlepidoptera of Ireland', additions and corrections. *Irish Naturalists' Journal* **8**: 16-17.
- Beirne, B. P. (1944) New records for Irish Lepidoptera. *Irish Naturalists' Journal* **8**: 147-149.
- Birchall, E. (1866) Catalogue of the Lepidoptera of Ireland. *Proceedings of the Natural History Society of Dublin* **5**: 57-85, 1 colour plate.
- Birchall, E. (1866-1867) The Lepidoptera of Ireland. *Entomologist's Monthly Magazine* **3**: 2-6, 31-37, 57-61, 73-76, 105-109, 128-131, 145-148, 169-173, 1 plate.
- Bland, K. P. (1996) Elachistidae. Pp 339-410, plates 16-17. In Emmet, A. M. (ed.) *The moths and butterflies of Great Britain and Ireland*. **3**. Harley Books, Colchester.
- Bland, K. P. (ed.) (2014) *The moths and butterflies of Great Britain and Ireland*. **Volume 5** (Part 1, the Tortricinae & Chlidanotinae, and Part 2, the Olethreutinae). Brill, Leiden.

- Bland, K. P., Corley, M. F. V., Emmet, A. M., Heckford, R. J., Huemer, P., Langmaid, J. R., Palmer, S. M., Parsons, M. S., Pitkin, L. M., Rutten, T., Sattler, K., Simpson, A. N. B. and Sterling, P. H. (2002) Gelechiidae. Pp 10-251, plates 1-6. *In* Emmet, A. M. and Langmaid, J. R. (eds) *Gelechiidae. The moths and butterflies of Great Britain and Ireland* **4**(2). Harley Books, Colchester.
- Bond, K. G. M. (1995) Irish Microlepidoptera check-list. *Bulletin of the Irish Biogeographical Society* **18**: 176-262.
- Bond, K. G. M. (1996) Previously unpublished records of Microlepidoptera to be added to the Irish list. *Irish Naturalists' Journal*. **25**: 194-207.
- Bond, K. G. M. (1999) The plume moth *Marasmarcha lunaedactyla* (Haworth) (Lepidoptera), new to Ireland, in Cos Waterford and Wexford. *Irish Naturalists' Journal* **26**(1998): 128.
- Bond, K. G. M. (2011) A historical Irish record of *Endothenia ustulana* (Haworth, 1811) (Lepidoptera: Tortricidae). *Irish Naturalists' Journal*. **31**(2010): 138-139.
- Bond, K. G. M. (2018) Additions and amendments to the Irish Microlepidoptera List since 2012. *Entomologist's Record and Journal of Variation* **130**: 113-120.
- Bond, K. G. M., Nash, R. and O'Connor, J. P. (2006) *An annotated checklist of the Irish butterflies and moths (Lepidoptera)*. The Irish Biogeographical Society in association with The National Museum of Ireland, Dublin.
- Bond, K. G. M. and O'Connor, J. P. (2012) Additions, deletions and corrections to *An annotated checklist of the Irish butterflies and moths (Lepidoptera)* with a concise checklist of Irish species and *Elachista biatomella* (Stainton, 1848) new to Ireland. *Bulletin of the Irish Biogeographical Society* **36**: 60-179.
- Bretherton, R. F., Davies, M., Dempster, J. P., Emmet, A. M., Heath, J., Melling, T., Morton, A. C., Oates, M., Porter, K. J., Read, M. J., Thomas, J. A. and Willmott, K. J. (1989) Lycaenidae. Pp 118-179. *In* Emmet, A. M. and Heath, J. (eds) *The moths and butterflies of Great Britain and Ireland*. 7(1). Hesperidae-Nymphalidae. The butterflies. Harley Books, Colchester.
- Bretherton, R. F., Goater, B. and Lorimer, R. I. (1979) Noctuidae. Pp 120-278. *In* Heath, J. and Emmet, A. M. (eds) *The moths and butterflies of Great Britain and Ireland*. **9**. *Sphingidae-Noctuidae Noctuidae and Hadeninae*. The Curwen Press, London.
- Bretherton, R. F., Goater, B. and Lorimer, R. I. (1983) Noctuidae (continued). Pp 36-413, plates 1-13. *In* Heath, J. and Emmet, A. M. (eds) *The moths and butterflies of Great Britain and Ireland*. **10**. Harley Books, Colchester.
- Bryant, T. (2007) *Bryotropha affinis* (Haworth) (Lepidoptera: Gelechiidae), first confirmed Irish record in Co Waterford (H6). *Irish Naturalists' Journal* **28**(2006): 341.
- Bryant, T. (2007) Pine Leaf-mining Moth *Clavigesta purdeyi* (Durrant) (Lepidoptera: Tortricidae), new to Ireland in Co Waterford (H6). *Irish Naturalists' Journal* **28**(2006):

342.

- Bryant, T. (2009) *Pediasia aridella* (Thunberg, 1788) (Lepidoptera: Pyralidae) and *Epermenia aequidentellus* (Hofmann, 1967) (Lepidoptera: Epermeniidae) new to Ireland in Co. Waterford (H6). *Irish Naturalists' Journal* **30**: 64.
- Bryant, T. (2009) Potato Tuber Moth (*Phthorimaea operculella* (Zeller, 1873)) (Lepidoptera: Gelechiidae) and Old World Webworm (*Hellula undalis* (Fabricius, 1781)) (Lepidoptera: Pyralidae) migrants new to Ireland in Co. Waterford (H6). *Irish Naturalists' Journal* **30**: 64-65.
- Bryant, T. (2009) *Syncopacma polychromella* (Rebel) (Lep: Gelechiidae) new to Ireland. *Entomologist's Record and Journal of Variation* **121**: 263.
- Bryant, T. (2010) *Nephopterix angustella* (Hb.) (Lepidoptera: Pyralidae) new to Ireland. *Entomologist's Record and Journal of Variation* **122**: 266.
- Bryant, T. (2010) *Cydia amplana* (Hübner, 1799) (Lepidoptera: Tortricidae) and *Uresiphita gilvata* (Fabricius, 1794) (Lepidoptera: Crambidae), migrants new to Ireland in Co. Waterford (H6). *Irish Naturalists' Journal* **30**(2009): 141-142.
- Bryant, T. (2013) Tunbridge Wells Gem (*Chrysodeixis acuta* (Walker, 1858)) (Lepidoptera: Noctuidae), a migrant new to Ireland. *Irish Naturalists' Journal* **33**: 69.
- Bryant, T. (2014) Willow Ermine *Yponomeuta rorrella* (Hübner) (Lep.: Yponomeutidae), a migrant new to Ireland. *Entomologist's Record and Journal of Variation* **126**: 189.
- Bryant, T. (2015) Bloxworth Snout (*Hypena obsitalis* (Hübner)) (Lepidoptera: Noctuidae) possibly resident in Ireland. *Irish Naturalists' Journal* **34**: 133-134.
- Bryant, T. (2016) Oriental Fruit Moth (*Grapholita molesta* (Busck)) (Lepidoptera: Tortricidae) a second Irish record. *Irish Naturalists' Journal* **35**: 65-66.
- Bryant, T. (2016) *Cornifrons ulceratalis* Lederer, 1858 (Lep.: Crambidae), a migrant new to Ireland. *Entomologist's Record and Journal of Variation* **128**: 210.
- Bryant, T. (2017) *Etiella zinckenella* (Treitschke, 1832) (Lep.: Pyralidae) a migrant new to Ireland. *Entomologist's Record and Journal of Variation* **129**: 225-226.
- Bryant, T. (2017) *Cydalima perspectalis* (Walker, 1859) (Lep.: Crambidae), new to Ireland. *Entomologist's Record and Journal of Variation* **129**: 230-231.
- Bryant, T. (2018) Heart & Dart *Agrotis exclamatoris* (Linnaeus, 1758) (Lep.: Noctuidae), a green-scaled aberrant. *Entomologist's Record and Journal of Variation* **130**: 199.
- Bryant, T. (2018) Bee Moth *Aphomia sociella* (Linnaeus, 1758) (Lep.: Pyralidae) lekking. *Entomologist's Record and Journal of Variation* **130**: 268.
- Bryant, T. (2018) *Apodia bifractella* (Duponchel, [1843]) (Lep.: Gelechiidae) new to Ireland. *Entomologist's Record and Journal of Variation* **130**: 268.
- Bryant, T. (2020) Boathouse Gem *Thysanoplusia daubei* (Boisduval, 1840) (Lep.: Noctuidae), a

- migrant new to Ireland. *Entomologist's Record and Journal of Variation* **132**: 218-219.
- Bryant, T. (2024) Golden Twin-Spot *Chrysodeixis chalcites* – an Immigrant Moth New to Ireland. *Atropos* **73**: 42.
- Bryant, T. (2024) Splendid Brocade *Lacanobia splendens* – An Immigrant Moth New to Ireland. *Atropos* **73**: 43.
- Bryant, T. and Bond, K. G. M. (2008) *Bactra venosana* (Zeller, 1847) (Lep: Tortricidae) new to the British Isles from Ireland. *Entomologist's Record and Journal of Variation* **120**: 97-99.
- Bryant, T. and Bond, K. G. M. (2010) *Crombrugghia laetus* (Zell.) (Lep.: Pterophoridae) new to Ireland. *Entomologist's Record and Journal of Variation* **122**: 34.
- Bryant, T. and Bond, K. G. M. (2014) Tomato Leaf Miner *Tuta absoluta* (Meyrick) (Lep.: Gelechiidae), a migrant new to Ireland. *Entomologist's Record and Journal of Variation* **126**: 186.
- Bryant, T. and Bond, K. G. M. (2017) *Ephestia woodiella* Richards & Thomson, 1932 (Lep.: Pyralidae) new to Ireland. *Entomologist's Record and Journal of Variation* **129**: 230.
- Bryant, T. and Bond, K. G. M. (2018) *Eucosma conterminana* (Guenée, 1845) (Lep.: Tortricidae) new to Ireland. *Entomologist's Record and Journal of Variation* **130**: 15.
- Bryant, T. and Bond, K. G. M. (2019) Marigold Shark *Cucullia calendulae* Treitschke, 1835 (Lep.: Noctuidae), a migrant new to Ireland. *Entomologist's Record and Journal of Variation* **131**: 64-65.
- Bryant, T. and Bond, K. G. M. (2021) *Homoeosoma nimbella* (Duponchel, 1836) [sic] (Lep.: Pyralidae) new to Ireland. *Entomologist's Record and Journal of Variation* **133**: 160-161.
- Bryant, T. and Walsh, P. (2007) Reports from coastal stations - 2006. Tramore Bay, Co Waterford. *Atropos* **30**: 84-85.
- Bryant, T. and Walsh, P. (2008) Reports from coastal stations - 2007. Tramore Bay, Co Waterford. *Atropos* **33**: 75.
- Bryant, T. and Walsh, P. (2009) Reports from coastal stations - 2008. Tramore Bay, Co. Waterford. *Atropos* **36**: 60-61.
- Bryant, T. and Walsh, P. (2010) Reports from coastal stations - 2009. Tramore Bay, Co. Waterford. *Atropos* **39**: 66-67.
- Bryant, T. and Walsh, P. (2011) Reports from coastal stations - 2010. Tramore Bay, Co. Waterford. *Atropos* **42**: 70-71.
- Bryant, T. and Walsh, P. (2012) Reports from coastal stations - 2011. Tramore Bay, Co. Waterford. *Atropos* **45**: 77-78.
- Bryant, T. and Walsh, P. (2013) Reports from coastal stations - 2012. Tramore Bay, Co. Waterford. *Atropos* **48**: 72.
- Bryant, T. and Walsh, P. (2014) Reports from coastal stations - 2013. Tramore Bay, Co.

- Waterford. *Atropos* **51**: 84.
- Bryant, T. and Walsh, P. (2015) Reports from coastal stations - 2014. Tramore Bay, Co. Waterford. Migration Review 2014. *Atropos*: 66-67.
- Bryant, T. and Walsh, P. (2016) Reports from coastal stations - 2015. Tramore Bay, Co. Waterford. Migration Review 2015. *Atropos*: 56-57.
- Bryant, T. and Walsh, P. (2017) Reports from coastal stations - 2016. Tramore Bay, Co. Waterford. Migration Review 2016. *Atropos*: 65-66.
- Bryant, T. and Walsh, P. (2019) Reports from coastal stations - 2017. Tramore Bay, Co. Waterford. Migration Review 2018. *Atropos*: 74-75.
- Bryant, T. and Walsh, P. (2019) Reports from coastal stations - 2018. Tramore Bay, Co. Waterford. Migration Review 2018. *Atropos*: 73-74.
- Bryant, T. and Walsh, P. (2020) Reports from coastal stations - 2019. Tramore Bay, Co. Waterford. Migration Review 2019. *Atropos*: 72-73.
- Bryant, T. and Walsh, P. (2022) Reports from coastal stations - 2020. Tramore Bay, Co. Waterford. Migration Review 2020. *Atropos*: 72-73.
- Clancy, S. P. (2008) The immigration of Lepidoptera to the British Isles in 2006. *Entomologist's Record and Journal of Variation* **120**: 209-276.
- Clancy, S. P. and Chapman, P. B. (2008) Bordered Gothic *Heliophobus reticulata hibernica* in the Republic of Ireland. *Atropos* **34**: 27-30.
- Davis, A. M. and Tordoff, G. M. (2018) Microlepidoptera review of 2017. *Entomologist's Record and Journal of Variation* **130**: 281-306.
- Davis, A. M. and Tordoff, G. M. (2019) Microlepidoptera review of 2018. *Entomologist's Record and Journal of Variation* **131**: 283-309.
- Davis, A. M. and Tordoff, G. M. (2020) Microlepidoptera review of 2019. *Entomologist's Record and Journal of Variation* **132**: 253-280.
- Davis, A. M. and Tordoff, G. M. (2021) Microlepidoptera review of 2020. *Entomologist's Record and Journal of Variation* **133**: 267-298.
- Davis, A. M. and Tordoff, G. M. (2022) Microlepidoptera review of 2021. *Entomologist's Record and Journal of Variation* **134**: 287-314.
- Davis, A. M. and Tordoff, G. M. (2023) Microlepidoptera review of 2022. *Entomologist's Record and Journal of Variation* **135**: 261-292.
- Davis, A. M. and Tordoff, G. M. (2024) Microlepidoptera review of 2023. *Entomologist's Record and Journal of Variation* **136**: 261-287.
- de Worms, C. G. M. (1979) Notodontidae. pp 39-65. In Heath, J. and Emmet, A. M. (eds) *The moths and butterflies of Great Britain and Ireland*. **9. Sphingidae-Noctuidae Noctuinae and Hadeninae**. The Curwen Press, London.
- de Worms, C. G. M. (1979) Lymantriidae. Pp 66-78. In Heath, J. and Emmet, A. M. (eds) *The*

- moths and butterflies of Great Britain and Ireland. 9. Sphingidae-Noctuidae Noctuinae and Hadeninae.* The Curwen Press, London.
- de Worms, C. G. M. (1979) Arctiidae. Pp 78-110. *In* Heath, J. and Emmet, A. M. (eds) *The moths and butterflies of Great Britain and Ireland. 9. Sphingidae-Noctuidae Noctuinae and Hadeninae.* The Curwen Press, London.
- de Worms, C. G. M. and Ellison, R. E. (1955) A visit to the Burren, Co. Clare and Tramore, Co. Waterford, August, 1954. *The Entomologist* **88**: 99-106.
- de Worms, C. G. M. and Ellison, R. E. (1957) Ireland revisited: June and July 1956. *The Entomologist* **90**: 83-91.
- Emmet, A. M. (1976) Nepticulidae. Pp 171-267. *In* Heath, J. (ed.) *The moths and butterflies of Great Britain and Ireland. 1. Micropterigidae-Heliozelidae.* The Curwen Press Ltd/Blackwell Scientific Publications, London/Oxford.
- Emmet, A. M. (1976) Tischeriidae. Pp 272-276. *In* Heath, J. (ed.) *The moths and butterflies of Great Britain and Ireland. 1. Micropterigidae-Heliozelidae.* The Curwen Press Ltd/Blackwell Scientific Publications, London/Oxford.
- Emmet, A. M. (1981) Records of Nepticulidae in Ireland since 1975. *Irish Naturalists' Journal* **20**: 186-188.
- Emmet, A. M. (1985) Ochsenheimeriidae. Pp 208-212. *In* Heath, J. and Emmet, A. M. (eds) *The moths and butterflies of Great Britain and Ireland. 2. Cossidae-Heliodinidae.* Harley Books, Colchester.
- Emmet, A. M. (1985) Lyonetiidae. Pp 212-239. *In* Heath, J. and Emmet, A. M. (eds) *The moths and butterflies of Great Britain and Ireland. 2. Cossidae-Heliodinidae.* Harley Books, Colchester.
- Emmet, A. M. (1996) Schreckensteiniidae. Pp 123-125. *In* Emmet, A. M. (ed.) *The moths and butterflies of Great Britain and Ireland. 3.* Harley Books, Colchester.
- Emmet, A. M. and Langmaid, J. (eds) (2002) *Oecophoridae to Scythridae. The moths and butterflies of Great Britain and Ireland. 4(1).* Harley Books, Colchester.
- Emmet, A. M., Langmaid, J. R., Bland, K. P., Corley, M. F. V. and Razowski, J. (1996) Coleophoridae. Pp 126-338, plates 1-8, 12-15. *In* Emmet, A. M. (ed.) *The moths and butterflies of Great Britain and Ireland. 3.* Harley Books, Colchester.
- Emmet, A. M., Watkinson, I. A. and Wilson, M. R. (1985) Gracillariidae. Pp 244-363. *In* Heath, J. and Emmet, A. M. (eds) *The moths and butterflies of Great Britain and Ireland. 2. Cossidae-Heliodinidae.* Harley Books, Colchester.
- Fleming, W. W. (1904) Lepidoptera at Portlaw, Co. Waterford. *Irish Naturalists' Journal* **13**: 294.
- Gilchrist, W. L. R. E. (1979) Sphingidae. Pp 20-39. *In* Heath, J. and Emmet, A. M. (eds) *The*

moths and butterflies of Great Britain and Ireland. 9. Sphingidae-Noctuidae Noctuinae and Hadeninae. The Curwen Press, London.

Goater, B. (1986) *British pyralid moths*. Harley Books, Colchester.

Goater, B. (1991) Lasiocampidae. Pp 306-323. In Emmet, A. M. and Heath, J. (eds) *The moths and butterflies of Great Britain and Ireland. 7(2). Lasiocampidae-Thyatiridae with life history chart of the British Lepidoptera*. Harley Books, Colchester.

Goater, B. (1991) Saturniidae. Pp 324-326. In Emmet, A. M. and Heath, J. (eds) *The moths and butterflies of Great Britain and Ireland. 7(2). Lasiocampidae-Thyatiridae with life history chart of the British Lepidoptera*. Harley Books, Colchester.

Goater, B. (1991) Drepanidae. Pp 331-339. In Emmet, A. M. and Heath, J. (eds) *The moths and butterflies of Great Britain and Ireland. 7(2). Lasiocampidae-Thyatiridae with life history chart of the British Lepidoptera*. Harley Books, Colchester.

Goater, B. (1991) Thyatiridae. Pp 340-353. In Emmet, A. M. and Heath, J. (eds) *The moths and butterflies of Great Britain and Ireland. 7(2). Lasiocampidae-Thyatiridae with life history chart of the British Lepidoptera*. Harley Books, Colchester.

Godfray, H. C. J. and Sterling, P. H. (1996) Epermeniidae. Pp 115-123, plate 12. In Emmet, A. M. (ed.) *The moths and butterflies of Great Britain and Ireland. 3.* Harley Books, Colchester.

Hart, C. (2011) *British plume moths. A guide to their identification and biology*. British Entomological and Natural History Society, Reading.

Hättenschwiler, P. (1985) Psychidae. Pp 128-151. In Heath, J. and Emmet, A. M. (eds) *The moths and butterflies of Great Britain and Ireland. 2. Cossidae-Heliodinidae*. Harley Books, Colchester.

Heath, J. (1976) Micropterigidae. Pp 151-155. In Heath, J. (ed.) *The moths and butterflies of Great Britain and Ireland. 1. Micropterigidae-Heliozelidae*. The Curwen Press Ltd/Blackwell Scientific Publications, London/Oxford.

Heath, J. (1976) Eriocraniidae. Pp 156-165. In Heath, J. (ed.) *The moths and butterflies of Great Britain and Ireland. 1. Micropterigidae-Heliozelidae*. The Curwen Press Ltd/Blackwell Scientific Publications, London/Oxford.

Heath, J. (1976) Hepialidae. Pp 166-170. In Heath, J. (ed.) *The moths and butterflies of Great Britain and Ireland. 1. Micropterigidae-Heliozelidae*. The Curwen Press Ltd/Blackwell Scientific Publications, London/Oxford.

Heath, J. and Pelham-Clinton, E. C. (1976) Incurvariidae. Pp 277-300. In Heath, J. (ed.) *The moths and butterflies of Great Britain and Ireland. 1. Micropterigidae-Heliozelidae*. The Curwen Press Ltd/Blackwell Scientific Publications, London/Oxford.

Hickin, N. (1992) *The butterflies of Ireland. A field guide*. Roberts Rinehart, Cork. 222pp.

Kane, W. F. de V. (1884) Report on Irish Lepidoptera. *Proceedings of the Royal Irish Academy*

14: 105-115.

- Kane, W. F. de V. (1901) *A catalogue of the Lepidoptera of Ireland*. West, Newman and Co., London.
- Langmaid, J. R., Palmer, S. M. and Young, M. R. (2018) *A field guide to the smaller moths of Great Britain and Ireland*. BENHS, Reading.
- Langmaid, J. R. and Young, M. R. (2006) Microlepidoptera review of 2005. *Entomologist's Record and Journal of Variation* **118**: 24-265.
- Langmaid, J. R. and Young, M. R. (2007) Microlepidoptera review of 2006. *Entomologist's Record and Journal of Variation* **119**: 241-266.
- Langmaid, J. R. and Young, M. R. (2009) Microlepidoptera review of 2007. *Entomologist's Record and Journal of Variation* **121**: 13-32.
- Langmaid, J. R. and Young, M. R. (2009) Microlepidoptera review of 2008. *Entomologist's Record and Journal of Variation* **121**: 265-287.
- Langmaid, J. R. and Young, M. R. (2010) Microlepidoptera review of 2009. *Entomologist's Record and Journal of Variation* **122**: 233-253.
- Langmaid, J. R. and Young, M. R. (2011) Microlepidoptera review of 2010. *Entomologist's Record and Journal of Variation* **123**: 249-277.
- Langmaid, J. R. and Young, M. R. (2012) Microlepidoptera review of 2011. *Entomologist's Record and Journal of Variation* **124**: 249-276. [The printed 2011 review was wrongly titled review of 2010]
- Langmaid, J. R. and Young, M. R. (2013) Microlepidoptera review of 2012. *Entomologist's Record and Journal of Variation* **125**: 205-230.
- Langmaid, J. R. and Young, M. R. (2014) Microlepidoptera review of 2013. *Entomologist's Record and Journal of Variation* **126**: 197-225.
- Langmaid, J. R. and Young, M. R. (2015) Microlepidoptera review of 2014. *Entomologist's Record and Journal of Variation* **127**: 237-264.
- Langmaid, J. R. and Young, M. R. (2016) Microlepidoptera review of 2015. *Entomologist's Record and Journal of Variation* **128**: 279-307.
- Langmaid, J. R. and Young, M. R. (2017) Microlepidoptera review of 2016. *Entomologist's Record and Journal of Variation* **129**: 265-290.
- McGrath, D. (2001) *A guide to Tramore Bay, Dunes and Backstrand*. Intacta Print, Waterford.
- McGrath, D. (2011) *A guide to The Waterford Coast*. Intacta Print, Waterford.
- Nash, D., Boyd, T. and Hardiman, D. (2012) *Ireland's butterflies: a review*. Dublin Naturalists' Field Club, Dublin.
- National Biodiversity Data Centre, 2024. National Biodiversity Data Centre, Waterford, Ireland, accessed 8 December 2024 <<https://maps.biodiversityireland.ie>>

- Nelson, B., Hughes, M. and Bond, K. (2011) The distribution of *Leptidea sinapis* (Linnaeus, 1758) and *L. reali* Reissinger, 1989 (Lepidoptera: Pieridae) in Ireland. *Entomologist's Gazette* **62**: 213-233.
- Nelson, B., Hughes, M., Nash, R. and Warren, M. (2001) *Leptidea reali* Reissinger 1989 (Lep.: Pieridae): a butterfly new to Britain and Ireland. *Entomologist's Record and Journal of Variation* **113**: 97-101.
- Nieukerken, E. J. van, Mutanen, M. and Doorenweerd, C. (2012) DNA barcoding resolves species complexes in *Stigmella salicis* and *S. aurella* species groups and shows additional cryptic speciation in *S. salicis* (Lepidoptera: Neptulidae). *Entomologisk Tidsskrift* **132**: 235-255.
- O'Connor, J. P. (2023) Bibliography of Irish Insects (1802-2020). *Occasional Electronic Publication of the Irish Biogeographical Society* **2**.
- O'Donnell, M. and Wilson, C. (2009) *The Lepidoptera of County Wexford*. Wexford Naturalists' Field Club, North Slob, Wexford.
- O'Meara, M. (2001) *The Lepidoptera of Waterford City and County*. Waterford Wildlife, Waterford.
- Parsons, M. S. and Clancy, S. P. (2023) *A guide to the pyralid and crambid moths of Britain and Ireland*. Atropos Publishing, Lizard.
- Pelham-Clinton, E. C. (1976) Opostegidae. Pp 268-271. In Heath, J. (ed.) *The moths and butterflies of Great Britain and Ireland*. **1. Micropterigidae-Heliodinidae**. The Curwen Press Ltd/Blackwell Scientific Publications, London/Oxford.
- Pelham-Clinton, E. C. (1985) Tineidae. Pp 152-207. In Heath, J. and Emmet, A. M. (eds) *The moths and butterflies of Great Britain and Ireland*. **2. Cossidae-Heliodinidae**. Harley Books, Colchester.
- Pelham-Clinton, E. C. (1985) Choreutidae. Pp 389-399. In Heath, J. and Emmet, A. M. (eds) *The moths and butterflies of Great Britain and Ireland*. **2. Cossidae-Heliodinidae**. Harley Books, Colchester.
- Pelham-Clinton, E. C. (1985) Glyphipterigidae. Pp 400-407. In Heath, J. and Emmet, A. M. (eds) *The moths and butterflies of Great Britain and Ireland*. **2. Cossidae-Heliodinidae**. Harley Books, Colchester.
- Randle, Z., Evans-Hill, L. J., Parsons, M. S., Tyner, A., Bourn, N. A. D., Davis, T., Dennis, E. B., O'Donnell, M., Prescott, T., Tordoff, G. M. and Fox, R. (2019) *Atlas of Britain & Ireland's larger moths*. Pisces Publications, NatureBureau Ltd., Newbury.
- Regan, E. C., Nelson, B., Aldwell, B., Bertrand, C., Bond, K., Harding, J., Nash, D., Nixon, D. and Wilson, C. J. (2010) Ireland *Red List No. 4 - Butterflies*. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin.
- Revell, R. J. (1979) Nolidae. Pp 112-120. In Heath, J. and Emmet, A. M. (eds) *The moths and*

- butterflies of Great Britain and Ireland. 9. Sphingidae-Noctuidae Noctuinae and Hadeninae.* The Curwen Press, London.
- Skinner, B. (1985) Cossidae. Pp 69-74. *In* Heath, J. and Emmet, A. M. (eds) *The moths and butterflies of Great Britain and Ireland. 2. Cossidae-Heliodinidae.* Harley Books, Colchester.
- Skinner, B. (2010) *Colour identification guide to moths of the British Isles.* Third revised edition. Apollo, Stenstrup.
- Sterling, P. and Parsons, M. (2023) *Field guide to the micro-moths of Great Britain and Ireland.* Second edition. British Wildlife Publishing, Gillingham, Dorset.
- Thomas, J. and Lewington, R. (2014) *The butterflies of Britain and Ireland* (New revised edition). British Wildlife Publishing, Oxford.
- Tremewan, W. G. (1985) Zygaenidae. Pp 74-123. *In* Heath, J. and Emmet, A. M. (eds) *The moths and butterflies of Great Britain and Ireland. 2. Cossidae-Heliodinidae.* Harley Books, Colchester.
- Walsh, P. M. and Bond, K. G. M. (2009) Dark Mottled Willow *Spodoptera ciliatum* (Boisd.) in Co. Waterford, 2008 - new to Ireland. *Atropos* **36**: 10-11.
- Waring, P. and Townsend, M. (2017) *Field guide to the moths of Great Britain and Ireland.* Third Edition. Bloomsbury Natural History, London.
- Wheeler, J. (2017) *Micro moth vernacular names.* Clifton & Wheeler, Norfolk.
- Wilson, C. J., Goodwin, J. and Bond, K. (2009) Addition of Essex Skipper Butterfly (*Thymelicus lineola* (Ochsenheimer, 1808)) (Lepidoptera: Hesperidae), to the Irish list and deletion of previously reported occurrence of Small Skipper Butterfly *Thymelicus sylvestris* (Poda, 1761) in Ireland. *Irish Naturalists' Journal* **29**(2008): 133-134.



FIGURE 1. The counties of Ireland. The location of County Waterford is indicated by an arrow.

NOTES ON THE GREY SILVERFISH *CTENOLEPISMA LONGICAUDATUM* ESCHERICH, 1905 (ZYGENTOMA; LEPISMATIDAE) IN IRELAND

J. P. O'Connor

Emeritus Entomologist, National Museum of Ireland - Natural History, Merrion Street, Dublin 2, D02 F627, Ireland.

e-mail: <joconnor@museum.ie>

Abstract

The occurrence of the grey silver silverfish *Ctenolepisma longicaudatum* Escherich, 1905 in Ireland is reviewed.

Key words: Zygentoma, Lepismatidae, *Ctenolepisma longicaudatum*, grey silverfish, Ireland, distribution.

Introduction

Silverfish, firebrats and bristletails were formerly grouped in a single order, the Thysanura (Delany, 1954), but silverfish and firebrats are now recognized as belonging to a separate order, the Zygentoma (Barnard, 2011). Two species (the common silverfish (*Lepisma saccharina* Linnaeus, 1758) and the firebrat (*Thermobia domestica* (Packard, 1937)) were known from Ireland until 2016 (O'Connor and Nelson, 2012) when the grey silverfish *Ctenolepisma longicaudatum* Escherich (1905) was discovered at the Greenmount Campus, Antrim, Northern Ireland (Irish grid reference J1584) (Monteith, 2018). This record is shown on a map in Mann *et al.* (2019). *C. longicaudatum* had been discovered in Great Britain two years previously in a building at Whitley Wood, Reading, Berkshire, England (Goddard *et al.*, 2016). The species was described by the German entomologist and professor of zoology Karl Leopold Escherich in 1905 based on type material collected in the Orange Free State, Republic of South Africa. Recently, the gender of the genus was shifted from feminine to neuter, and so, the species name should be changed from *longicaudata* to *longicaudatum* (Kulma *et al.*, 2021).

In 2024, while waiting in an office in a commercial building in Castleknock, County Dublin, the author noticed a large unusual looking silverfish wandering in and out from under a carpet on a wooden floor. Unable to catch the specimen, he subsequently informed a member of staff about it and several months later was given a live individual. It was identified as a grey silverfish *C. longicaudatum* using Aak *et al.* (2019). This publication also contains a key to species which may be yet found in Ireland.

The new record

DUBLIN: Castleknock (O0837), commercial block with offices and shops, 1 ♀ collected alive 6

June 2024 by Barbara Kelly, determined: J. P. O'Connor (Plate 1).

Previous Irish records

In addition to the Antrim and Dublin records given above, the species has been reported from six other Irish sites: **ANTRIM**: Templepatrick (J2385), 13 September 2018, Rodney Monteith. **CORK**: Cork City (W67), October 2017, domestic premises, Killgerm identification; Cork City (W67), December 2017, apartments, Killgerm identification. **DUBLIN**: Balbriggan (O16), January 2021, domestic premises, iNaturalist.org. **GALWAY**: Galway City (M22), September 2019, medical center, iNaturalist.org. **MAYO**: Ballina (G21), July 2020, domestic premises, iNaturalist.org (Kulma *et al.*, 2021; NBN, 2024). (Several sites had no grid references and these have been estimated). The known Irish distribution is shown (Fig. 1).

Recognition of the grey silverfish in Ireland

The grey silverfish can be easily distinguished from the ubiquitous common silverfish by its hairiness including a “beard” on the head, long caudal appendages lying at right angles to each other and long antennae (Plate 1). In the unicolored common silverfish, the middle tail appendage is shorter than half the length of the body. The grey silverfish resembles the very rare firebrat but differs in colouration on the dorsal side. The former has a grey or beige dorsal side; the latter has a clear mixed beige and black patterned dorsal side. The firebrat only grows up to 12mm compared with the up to 18mm for the grey silverfish (excluding antennae and caudal appendages). Under a microscope, the two species can be separated by an examination of the bristle combs on the dorsal plates on the second to sixth abdominal segments. The firebrat has only two of these on each side (one dorsally and one laterally), the grey silverfish has three (two dorsally and one laterally). The sex of a specimen can be ascertained using Aak *et al.* (2019).



PLATE 1. *Ctenolepisma longicaudatum*, ♀, Castleknock, Dublin, 6 June 2024. Photograph: J. P. O'Connor.

Discussion

The grey silverfish is also known as the paperfish, giant, gray and long-tailed silverfish. In the early 19th Century, it was described as a nuisance pest in South Africa and Australia but may have originated in North America or the Caribbean. The species is now widespread on the continent of Europe. It has a high tolerance to starving, low humidity and temperatures. Individuals can live for seven years. They are capable of chewing on many substrates. In private residences, mechanical damage is very limited. However in libraries, museums and art galleries, irreplaceable objects in collections can become degraded or destroyed (Goddard *et al.*, 2016; Aak *et al.*, 2019; Kulma *et al.*, 2021).

Product packing, crates and boxes are the most likely candidates for transport, providing a multitude of hiding places. This species has a good dispersal ability within buildings once established (Aak *et al.*, 2019). The grey silverfish will probably soon become widely distributed indoors in Ireland.

Acknowledgements

The author is very grateful to Barbara Kelly for collecting the specimen, Mary O'Connor and Dr Jervis Good for their comments on the original manuscript. Alan Morton kindly supplied the relevant software programme used for preparing the Irish distribution maps with DMAP.

References

- Aak, A., Rukke, B. A., Ottesen, P. S. and Hage, M. (2019) Long-tailed silverfish (*Ctenolepisma longicaudata*) – biology and control. Norwegian Institute of Public Health, Oslo.
<www.fhi.no>
- Barnard, P. C. (2011) *The Royal Entomological Society Book of British Insects*. Wiley-Blackwell, Chichester. 383pp.
- Delany, M. J. (1954) Thysanura and Diplura. *Handbooks for the Identification of British Insects* 1(2). Royal Entomological Society, London.
- Goddard, M. R., Foster, C. W. and Holloway, G. J. (2016) *Ctenolepisma longicaudata* (Zygentoma: Lepismatidae) new to Britain. *British Journal of Entomology and Natural History* **29**: 33-35, plate 3, figure 1.
- Kulma, M., Bubová, T., Davies, M. P., Boiocchi, F. and Patoka, J. (2021) *Ctenolepisma longicaudatum* Escherich (1905) became a common pest in Europe: case studies from Czechia and the United Kingdom. *Insects* **2021**, 12, 810.
<<https://doi.org/10.3390/insects12090810>>
- Mann, D. J., Steer, L., McCormack, D., Moore, A. and Pinniger, D. (2019) Lepismatidae. 2018 Annual Exhibition. *British Journal of Entomology and Natural History* **32**: 144- 145.
- Monteith, R. (2018) First record of the grey silverfish *Ctenolepisma longicaudata* Escherich,

1905, (Zygentoma: Lepismatidae) from Northern Ireland. *Entomologist's Monthly Magazine* **154**: 308.

NBN (2024) Record: 8785800 (*Ctenolepisma longicaudata*)
<<https://records.nbnatlas.org/occurrences/b9937b6c-b89b-4aec-bca3-aab8d01b6f4b>>
(accessed 20 December 2024)

O'Connor, J. P. and Nelson, B. (2012) *An annotated checklist of the Irish Hemiptera and small orders*. The Irish Biogeographical Society, Dublin. vii + 152pp.

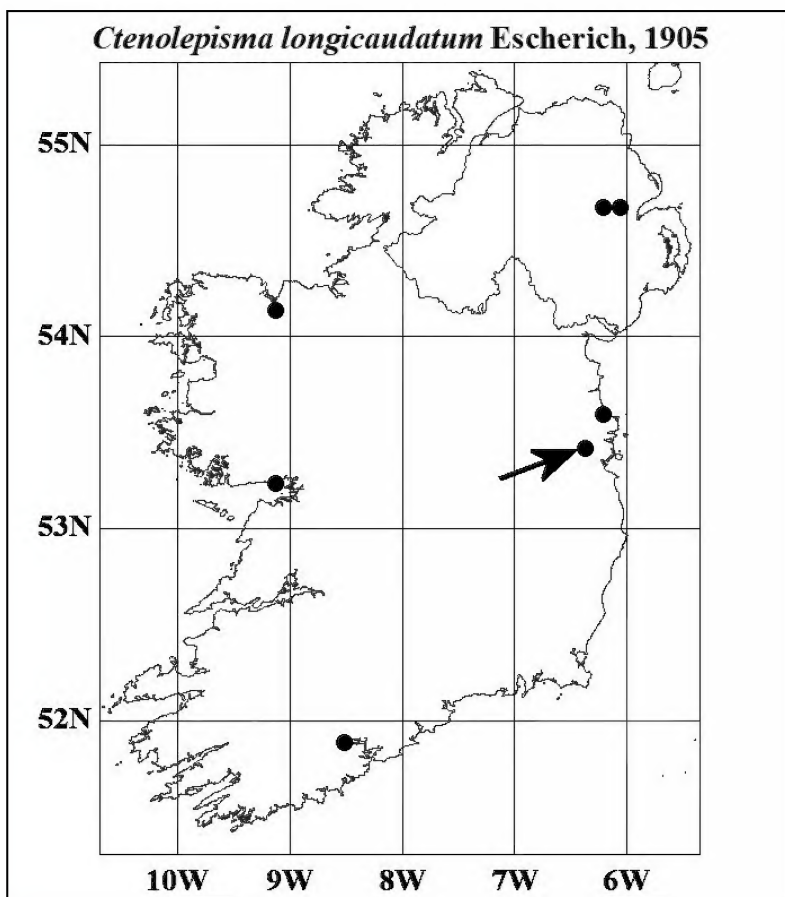


FIGURE 1. The known Irish distribution of *Ctenolepisma longicaudatum* Escherich, 1905. The Castleknock record is indicated.

RECORDS OF IRISH CADDISFLIES (TRICHOPTERA) INCLUDING *OECETIS TESTACEA* (CURTIS, 1834) NEW TO NORTHERN IRELAND

James P. O'Connor¹, Hugh B. Feeley², Anthony Bryant³, Pascal Sweeney⁴, Rodney Monteith⁵, John T. Brophy⁶ and Ryan Mitchell⁷

¹*Emeritus Entomologist, National Museum of Ireland - Natural History, Merrion Street, Dublin 2, D02 F627, Ireland.*

e-mail: <joconnor@museum.ie>

²*Environmental Protection Agency, McCumiskey House, Richview, Clonskeagh Road, Dublin 14, D14 YR62, Ireland.*

³*Priest's Road, Tramore, Co. Waterford, Ireland.*

⁴*Rahan, Mallow, Co. Cork, Ireland.*

⁵*Antrim, Northern Ireland.*

⁶*25 Cambridge Road, Rathmines, Dublin 6, Ireland.*

⁷*Johnstown Court, Sligo, County Sligo, Ireland.*

Abstract

Recently discovered records of the caddisflies (Trichoptera) of Ireland are reported including new monad and hectad ones. *Oecetis testacea* is recorded from Northern Ireland for the first time. New county records are also noted including for the rare and endangered *Limnephilus pati*.

Key words: Trichoptera, *Oecetis testacea*, *Limnephilus pati*, caddisflies, Ireland, Northern Ireland, new records, distribution.

Introduction

Since the publication of Little and O'Connor (2024), O'Connor, Bryant and Monteith (2024) and O'Connor, O'Connor and Feeley (2024), further information has been discovered concerning the the distribution of the Irish Trichoptera fauna including new monad (1km²) and hectad (10km²) records. New county records are also reported including for the rare and endangered *Limnephilus pati* O'Connor, 1980. *Oecetis testacea* (Curtis, 1834) is reported from Northern Ireland for the first time. Four figure (1km²) Irish grid references are given for each record. Unless otherwise stated, adults were identified or their identity confirmed by the senior author using Malicky (2004), Barnard and Ross (2012), Salokannel and Mattila (2018) and Wallace, Flint and Flint (2022). Pascal Sweeney determined the larvae that he collected with Edington and Hildrew (1995) and Wallace, Wallace and Philipson (2003). Information on the ecology and flight periods of the listed species will be found in O'Connor (2015, 2021).

Oisín Duffy, Surveys and Records Officer with the National Biodiversity Data Centre kindly

provided a data set containing Irish Trichoptera records (sent to the Centre by the public in 2024) for validation by the senior author. These ranged in quality. Some were supported by photographs and were named. Others were unnamed. The specimens were mainly adults but some larvae were included. The confirmed records are included. They are indicated by (NBDC, 2025). Hugh B. Feeley collected all his specimens by beating bankside vegetation.

Addenda 8-10

Three Addenda (8-10) were uploaded by the National Biodiversity Data Centre in 2024 to the dataset “Caddisflies (Trichoptera) of Ireland” <<https://maps.biodiversityireland.ie/Dataset/250>> (O’Connor, 2024). There are now 19119 records for 156 species from 1203 sites. The data were also provided to CEDaR.

Addendum 11

The records in this paper will be sent to the National Biodiversity Data Centre as Addendum 11 for incorporation into the above dataset. They will also be sent to CEDaR.

The records

RHYACOPHILIDAE

***Rhyacophila dorsalis* (Curtis, 1834)**

ANTRIM: Inver River tributary (D2218), 1♂1♀ 5 September 2024, C. McNaughton. Springfarm (J1488), 1♂ 7 August 2024, light-trap, R. Monteith.

CORK: River Blackwater, Killavullen Bridge (W6499), larva 28 April 1996, P. Sweeney. River Blackwater, Lombardstown Bridge (W4696), larva 28 April 1996, P. Sweeney. Stream, Castlehaven (W1730), larva 9 February 2024, A. Haigh (NBDC, 2025).

SLIGO: Union Wood (G6828), 3♂♂ 24 August 2024, R. Mitchell.

TYRONE: River Derg, Castlederg (H2784), 1♂ 29 June 2024, swept. R. Monteith.

WATERFORD: Fenor Bog (S5301), 1♀ 2 June 2024, light trap, T. Bryant. Glenary River, bridge west of Glenabbey (S1818), 1♀ 26 April 2024, H. B. Feeley. River Tay, Ballykilmurray Bridge (S3005), 1♂ 26 April 2024, H. B. Feeley. River Deehil tributary, bridge on L3019 (S3102), 1♂ 26 April 2024, H. B. Feeley. Mahon River, Mahon Falls (S3108), 1♂ 26 April 2024, H. B. Feeley.

WICKLOW: Avonmore (Cloghoge) River, 1km southeast of the Sally Gap (O1409), 1♂ 18 June 2024, H. B. Feeley. Glenmacnass Bridge, downstream of Mall Brook (O1200), 1♂ 17 April 2024, H. B. Feeley.

***Rhyacophila munda* McLachlan, 1862**

WICKLOW: Knocksink Woods, Glencullen River (O2117), 2♂♂ 5 May 2024, R. Mitchell.

GLOSSOSOMATIDAE

Agapetus fuscipes Curtis, 1834

CAVAN: Chapel Lake stream upstream of the Blackwater River (N6195), ♂3♀♀ 2 July 2024, H. B. Feeley. Lislea Bridge, upstream of Lough Ramor (N6286), 2♂♂3♀♀ 3 July 2024, H. B. Feeley.

Mullagh Lough stream, bridge upstream of the Moyalty River (N7084), 3♂♂1♀ 4 July 2024, H. B. Feeley. Nadreegeel Lough stream, Assan Bridge, (N5596), 2♂♂1♀ 3 July 2024, H. B. Feeley.

CLARE: River Fergus, Popular Bridge (R2791), 2♂♂1♀ 29 May 2024, H. B. Feeley.

CORK: Dungourney River, Middleton (W8873), larva 1 May 1997, P. Sweeney. Dungourney River, Roxborough (W9074), larva 1 May 1997, P. Sweeney.

KILKENNY: River Nore, Ballyconra (S4372), larva 20 May 2011, P. Sweeney.

MEATH: Devlin's River, bridge south of Grange crossroads (N9578), 1♀ 11 July 2024, H. B. Feeley.

SLIGO: Union Wood (G6828), 4♂♂ 16 July 2024 and 1♂ 24 August 2024, R. Mitchell.

WATERFORD: Corbally Beg (Carbally Church) (S6401), 1♂ 18 June 2024, swept, T. Bryant. Glen Road, Tramore (S5702), 1♂ 24 May 2024, swept, T. Bryant.

Agapetus ochripes Curtis, 1834

ANTRIM: Springfarm (J1488), 1♀ 20 June 2024, light-trap, R. Monteith.

CARLOW: River Barrow, Bestfield (S7179), larva 22 April 2003, P. Sweeney.

MEATH: Moynalty River, Carlanstown Bridge (N7679), 1♂2♀♀ 4 July 2024, H. B. Feeley.

SLIGO: Union Wood (G6828), 3♂♂4♀♀ 24 August 2024, R. Mitchell.

Glossosoma boltoni Curtis, 1834

ANTRIM: Springfarm (J14880), 1♀ 21 April 2024, light-trap, R. Monteith.

CORK: River Blackwater, Killavullen Bridge (W6499), larva 28 April 1996, P. Sweeney.

MAYO: Srah River, bridge on the R300 (M1172), 3♂♂1♀ 30 March 2024, H. B. Feeley.

MEATH: Moynalty River, Carlanstown Bridge (N7679), 2♂♂ 4 July 2024, H. B. Feeley. River Blackwater (Kells), Headford Bridge (N7675), 2♀♀ 8 July 2024, H. B. Feeley.

SLIGO: Union Wood (G6828), 3♂♂ 24 August 2024, R. Mitchell.

WATERFORD: Araglin River, Coum Bridge (S2403), 1♀ 26 April 2024, H.B. Feeley.

WICKLOW: Knocksink Wood, Glencullen River (O2118), 1♀ 16 August 2024, R. Mitchell.

Glossosoma conformis Neboiss, 1963

ANTRIM: Springfarm (J1488), 1♀ 2 May 2024, 1♀ 8 May 2024, 1♀ 12 May 2024, 2♀♀ 15 July 2024 & 1♀ 7 September 2024, light-trap, R. Monteith.

HYDROPTILIDAE

Agraylea multipunctata Curtis, 1834

ANTRIM: Lough Neagh, Randalstown (J0986), 6♂♂, 20 July 2022, swept lake vegetation, R. Mitchell.

KILKENNY: River Nore, Ballyragget Bridge (S4470), larva 22 May 2012, P. Sweeney.

Hydroptila cornuta Mosley, 1922

ANTRIM: Lough Neagh, Randalstown (J0986), 5♂♂4♀♀ 20 July 2022, swept lake vegetation, R. Mitchell.

Hydroptila forcipata (Eaton, 1873) New to County Louth

ANTRIM: Lough Neagh, Rea's Wood (J1385), 1♂ 17 May 2024, swept, R. Monteith.

LOUTH: River Glyde, Castlebellingham (O0695), 1♀ 2 May 2024, H. B. Feeley.

MEATH: River Boyne, Slane Bridge (N9673), 1♂ 11 July 2024, H. B. Feeley.

Hydroptila sparsa Curtis, 1834

ANTRIM: River Maine, Randalstown (J0891), 1♂ 12 June 2024, swept, R. Monteith.

Hydroptila tineoides Dalman, 1819

ANTRIM: Lough Neagh, Rea's Wood (J1385), 1♂ 17 May 2024, swept, R. Monteith.

Orthotrichia costalis (Curtis, 1834)

WATERFORD: Fenor Bog (S5301), 1♀ 2 June 2024, light trap, T. Bryant.

PHILOPOTAMIDAE

Chimarra marginata (Linnaeus, 1761) New to County Cavan and County Longford

CAVAN: River Blackwater (Kells), just upstream of Lough Ramor (N6087), 5♂♂ 1♀ 3 July 2024, H. B. Feeley.

LONGFORD: Longford Bridge near Drinan (N1458), adult 24 June 2024, L. Cloake (NBDC, 2025).

SLIGO: Union Wood (G6828), 1♂ 24 August 2024, R. Mitchell.

Philopotamus montanus (Donovan, 1813) New to County Armagh

ARMAGH: Ferryhill Stream, Ferryhill Road (J1119), 2♂♂ 3 March 2024, H. B. Feeley.

DONEGAL: stream, Killybegs (G7074), adult 29 March 2024, M. Muirhead (NBDC, 2025).

SLIGO: Union Wood, Collooney (G6828), 1♂ 20 April 2024, R. Mitchell.

TYRONE: Gortin Water, Orritor, Cookstown (H7779), 1♂1♀ 29 March 2023, coll. & det. J. T. Brophy.

WATERFORD: Coummahon, south of the Mahon River near the carpark (S3310), 4♂♂ 26 April 2024, H. B. Feeley. Curraghateskin Stream, small road to Curraghateskin (S1919), 1♂ 16 April 2024, H. B. Feeley. Fenor Bog (S5301), 1♂ 23 July 2024, light trap, T. Bryant. Glenary River, bridge west of Glenabbey (S1818), 2♂♂ 26 April 2024, H. B. Feeley. River Araglin

tributary, ford south-east of Coum Bridge (S2403), 2♂♂ 26 April 2024, H. B. Feeley. Tributary of the River Neir, Lachtnafranke (S2417), 2♂♂ 26 April 2024, H. B. Feeley.

***Wormaldia occipitalis* (Pictet, 1834)**

SLIGO: Union Wood, Collooney (G6828), 1♂ 11 April 2024 and 2♂♂ 16 July 2024, R. Mitchell.

WATERFORD: Ballyscanlan (S5302), 1♂ 16 July 2024, swept, T. Bryant.

WICKLOW: Knocksink Woods, Glencullen River (O2117), 1♂ 5 May 2024, R. Mitchell.

POLYCENTROPODIDAE

***Cyrnus trimaculatus* (Curtis, 1834)**

SLIGO: Doorly Park, Garvoge River (G7035), 3♂♂1♀ 22 June 2023, R. Mitchell.

WICKLOW: Lough Tay, north shore (beach) (O1507), 1♂ 18 June 2024, H. B. Feeley.

***Holocentropus dubius* (Rambur, 1842)**

KERRY: Tullig beg (V7396), larva 13 August 2024, P. Sweeney (NBDC, 2025).

***Holocentropus picicornis* (Stephens, 1836) New to County Carlow**

CARLOW: River Barrow, near Strawhall (S7178), larva 22 April 2003, P. Sweeney.

DUBLIN: Grand Canal, Gollierstown (O0131), 1♂ 11 July 2023, coll. & det. J. T. Brophy.

***Plectrocnemia conspersa* (Curtis, 1834) New to County Carlow**

ANTRIM: Springfarm (J1488), 1♀ 17 September 2024, light-trap, R. Monteith.

CARLOW: River Barrow, Sleatygraique (S7277), larva 19 May 2008, P. Sweeney.

CORK: River Blackwater, Lombardstown Bridge (W4696) larva 28 April 1996, P. Sweeney.
River Blackwater, Mallow (W5598), larva 28 April 1996, P. Sweeney.

WATERFORD: Fenor Bog (S5301), 1♀ 2 June 2024, light trap, T. Bryant.

***Polycentropus flavomaculatus* (Pictet, 1834)**

ANTRIM: Lough Neagh, Randalstown (J0986), 23♂♂1♀ 20 July 2022, swept lake vegetation, R. Mitchell. Lough Neagh, Rea's Wood (J1385), 1♀ 17 May 2024, swept, R. Monteith.

CLARE: River Fergus, Popular Bridge (R2791), 1♂1♀ 29 May 2024, H. B. Feeley.

WATERFORD: Fenor Bog (S5301), 1♂ 2 June 2024, light trap, T. Bryant.

WICKLOW: Knocksink Wood, Glencullen River (O2118), 1♂ 21 July 2024, R. Mitchell.

***Polycentropus irroratus* (Curtis, 1835)**

SLIGO: Union Wood (G6828), 1♀ 24 August 2024, R. Mitchell.

***Polycentropus kingi* McLachlan, 1881**

CORK: Dungourney River, Roxborough (W9074), larva 1 May 1997, P. Sweeney.

MEATH: Moynalty River, Cloggagh Bridge (N6791), 1♂ 4 July 2024, H. B. Feeley.

PSYCHOMYIIDAE

***Lype phaeopa* (Stephens, 1836) New to Louth**

LOUTH: River Glyde, Castlebellingham (O0695), 1♂ 2 May 2024, H. B. Feeley.

***Lype reducta* (Hagen, 1868) New to County Carlow**

CARLOW: River Barrow, near Strawhall (S7178), larva 19 May 2008, P. Sweeney.

CORK: Dungourney River, Roxborough (W9074), larva 1 May 1997, P. Sweeney.

KERRY: River Laune, Killorglin (V7796), larva 6 August 2024, tidal weedy edge, P. Sweeney.

***Psychomyia pusilla* (Fabricius, 1781) New to County Louth**

ANTRIM: Lough Neagh, Rea's Wood (J1385), 1♀ 17 May 2024, swept, R. Monteith. River Maine, Randalstown (J0891), 1♂ 12 June 2024, R. Monteith.

LAOIS: River Nore, Tallyho Bridge (S4276), larva 25 May 2010, P. Sweeney.

LOUTH: Mattock River, Boyds Bridge (O0180), 1♂ 16 July 2024, H. B. Feeley.

MEATH: River Blackwater (Kells), bridge near Caracross (N6877), 1♂ 8 July 2024, H. B. Feeley. River Blackwater (Kells), Donaghpatrick Bridge (N8172), 2♀♀ 9 July 2024, H. B. Feeley.

***Tinodes maclachlani* Kimmins, 1966**

SLIGO: Union Wood, Collooney (G6828), 1♀ 16 July 2024, R. Mitchell.

***Tinodes unicolor* (Pictet, 1834) New to County Meath**

MEATH: River Boyne, downstream of the Broadboyne Bridge (N9271), 1♀ 11 July 2024, H. B. Feeley.

***Tinodes waeneri* (Linnaeus, 1758)**

ANTRIM: Lough Neagh, Randalstown (J0986), 2♂♂ 20 July 2022, swept lake vegetation, R. Mitchell.

CARLOW: River Barrow, Sleatygraique (S7277), larva 19 May 2008, P. Sweeney.

SLIGO: Doorly Park, Garvoge River (G7035), 2♂♂ 22 June 2023, R. Mitchell.

WICKLOW: Lough Bray Lower, south shore (O1315), 1♂2♀♀ 19 June 2024, H. B. Feeley. Lough Tay, north shore (beach) (O1507), 2♂♂2♀♀ 18 June 2024, H. B. Feeley.

HYDROPSYCHIDAE

***Cheumatopsyche lepida* (Pictet, 1834)**

CORK: River Blackwater, Killavullen Bridge (W6499), larva 28 April 1996, P. Sweeney.

MEATH: River Blackwater (Kells), Donaghpatrick Bridge (N8172), 1♂ 9 July 2024, H. B. Feeley.

***Dipterona felix* McLachlan, 1878 New to County Sligo**

SLIGO: Union Wood, Collooney (G6828), 3♂♂ 16 July 2024, R. Mitchell.

***Hydropsyche angustipennis* (Curtis, 1834)**

CORK: Dungourney River, Midleton (W8873), larva 1 May 1997, P. Sweeney. River Blackwater, Killavullen (W6499), larva 28 April 1996, P. Sweeney. River Blackwater, Lombardstown Bridge (W4696), larva 28 April 1996, P. Sweeney. River Blackwater, Mallow (W5598), larva 28 April 1996, P. Sweeney.

***Hydropsyche contubernalis* McLachlan, 1865**

CORK: River Blackwater, Killavullen Bridge (W6499), larva 28 April 1996, P. Sweeney.

***Hydropsyche instabilis* (Curtis, 1834)**

CORK: Dungourney River, Midleton (W8873), larva 1 May 1997, P. Sweeney.

***Hydropsyche pellucidula* (Curtis, 1834)**

CARLOW: River Barrow, Bestfield (S7179), larva 19 May 2008, P. Sweeney.

CORK: Dungourney River, Midleton (W8873), larva 1 May 1997, P. Sweeney. Dungourney River, Roxborough (W9074), larva 1 May 1997, P. Sweeney. River Blackwater, Killavullen Bridge (W6499), larva 28 April 1996, P. Sweeney. River Blackwater, Lombardstown Bridge (W4696), larva 28 April 1996, P. Sweeney.

***Hydropsyche siltalai* Döhler, 1963**

ANTRIM: Glencloy River, Carnlough (D2816), 1♂ 16 July 2024, C. McNaughton.

CARLOW: River Barrow, Sleatygrigue (S7277), larva 19 May 2008, P. Sweeney.

CAVAN: River Blackwater (Kells), bridge 2km northeast of Ballyborough (N6998), 2♀♀ 2 July 2024, H. B. Feeley.

CLARE: River Fergus, Addroon Bridge (R3587), 3♀♀ 30 May 2024, H. B. Feeley.

CORK: Dungourney River, Midleton River (W8873), larva 1 May 1997, P. Sweeney. Blackwater, Lombardstown Bridge (W4696), larva 28 April 1996, P. Sweeney.

MEATH: Moynalty River, Carlanstown Bridge (N7679), 1♂ 4 July 2024, H. B. Feeley. River Boyne, upstream of the Knightsbrook River confluence (N8256), ♀ 10 July 2024, H. B. Feeley.

PHRYGANEIDAE

***Agrypnia obsoleta* (Hagen, 1864) New to County Cork**

CORK: Ballyhass, former quarry site (R4502), abundant larvae 30 November 2024, P. Sweeney.

***Phryganea bipunctata* Retzius, 1783**

WATERFORD: Ballyscanlan (S5302), 1♀ 11 May 2024, light trap, T. Bryant.

GOERIDAE

***Goera pilosa* (Fabricius, 1775)**

CORK: Dungourney River, Midleton (W8873), larva 1 May 1997, P. Sweeney.

KERRY: River Laune, Killorglin (V7796), larva 6 August 2024, tidal weedy edge, P. Sweeney.

LAOIS: River Nore, Tallyho Bridge (S4276), larva 25 May 2010, P. Sweeney.

MEATH: River Blackwater (Kells), bridge downstream Parker's Bridge (N6396), 1♂ 2 July 2024, H. B. Feeley.

***Silo nigricornis* (Pictet, 1834) New to County Waterford**

CLARE: River Fergus, Popular Bridge (R2791), 2♂♂ 29 May 2024, H. B. Feeley.

WATERFORD: Glen Road, Tramore (S5702) 1♀ 24 May 2024, T. Bryant.

***Silo pallipes* (Fabricius, 1781)**

CAVAN: Nadreegeel Lough stream, Assan Bridge (N5596), 1♀ 3 July 2024, H. B. Feeley.

WICKLOW: Ballinagee River, Ballinagee, near Banagher (O0403), 1♂1♀ 21 July 2023, coll. & det. J. T. Brophy.

LEPIDOSTOMATIDAE

***Crunoecia irrorata* (Curtis, 1834)**

SLIGO: Union Wood, Collooney (G6828), 1♂ 16 July 2024, R. Mitchell.

***Lepidostoma basale* (Kolenati, 1848) New to County Limerick**

CORK: Fermoy Mill Race, River Blackwater (W8198), larva 3 November 2011, P. Sweeney.

GALWAY: Boleyneendorrish River, Kenny's Bridge (M5105), larva 2 February 2024, L. Cocchiglia, det. P. Sweeney.

LIMERICK: Groody River at Ballysimon (R6155), several larvae 13 February 2025, P. Sweeney.

***Lepidostoma hirtum* (Fabricius, 1775)**

CARLOW: River Barrow, Bestfield (S7179), larva 19 May 2008, P. Sweeney.

CORK: Dungourney River, Midleton (W8873), larva 1 May 1997, P. Sweeney. Dungourney River, Roxborough (W9074), larva 1 May 1997, P. Sweeney. River Blackwater, Lombardstown Bridge (W4696), larva 28 April 1996, P. Sweeney.

LONGFORD: River Inny Ballymulvey (N1757), adult 22 June 2024, L. Cloake (NBDC, 2025).

MEATH: Moynalty River, Carlanstown Bridge (N7679), 1♀ 4 July 2024, H. B. Feeley.

TIPPERARY: River Suir, Ballybeg (S1417), adult 11 August 2024, light-trap, L. Garcia (NBDC, 2025).

WATERFORD: Tramore saltmarsh (S6000), 1♀ 3 June 2024, light trap, T. Bryant.

APATANIIDAE

***Apatania wallengreni* McLachlan, 1871**

GALWAY: Lough Corrib, Upper Cappacorroge (M1353), 1♂3♀♀, 16 April 2024, B. Kennedy.

MAYO: Lough Beltra, east shore (M0898), 5♂♂ 2 April 2024. H. B. Feeley.

LIMNEPHILIDAE

***Drusus annulatus* (Stephens, 1837)**

ANTRIM: Springfarm (J1488), 1♂ 5 September 2024, light-trap, R. Monteith.

WATERFORD: Dalligan River tributary (S2801), 1♀ 26 April 2024, H. B. Feeley. Mahon River, Mahon Falls (S3108), 1♀ 26 April 2024, H. B. Feeley.

***Chaetopteryx villosa* (Fabricius, 1798) New to County Laois**

LAOIS: near tributary of the Mountrath River, Mountrath (S3696), adult 3 December 2024, R. Mc Kenna (NDBC, 2025).

***Anabolia nervosa* (Curtis, 1834) New to County Carlow**

CARLOW: River Barrow, Sleatygraigue (S7177), larva 22 April 2003, P. Sweeney.

***Glyphotaelius pellucidus* (Retzius, 1783) New to County Sligo**

KERRY: near Sneem (V6865), ♀ 21 August 2024, light-trap, C. Hamilton (NBDC, 2025).

SLIGO: Union Wood (G6828), 1♂ 24 August 2024, R. Mitchell.

WESTMEATH: Fardrum (N0839), adult 16 August 2024, D. McKay (NBDC, 2025).

***Limnephilus affinis* Curtis, 1834**

WATERFORD: Tramore sandhills (S6100), 1♂ 31 August 2024, light trap, T. Bryant.

***Limnephilus auricula* Curtis, 1834**

ANTRIM: Springfarm (J1488), 1♂ 2 May 2024, 1♂ 8 May 2024, ♂ 5 September 2024, light-trap, R. Monteith.

CAVAN: Chapel Lake stream, upstream of the Blackwater River (N6195), 1♂ 2 July 2024, H. B. Feeley.

DONEGAL: Sandfield (G7095), 1♀ 28 April 2023, coll. & det. J. T. Brophy.

***Limnephilus borealis* (Zetterstedt, 1840)**

ANTRIM: Loughnatullig, Garron Plateau (D2521), adults 30 August 2024, C. McNaughton (DNBC, 2025).

***Limnephilus decipiens* (Kolenati, 1848)**

GALWAY: Lough Derg, Portumna (M8503), 1♀ 10 October 2023, coll. & det. J. T. Brophy.

OFFALY: Fin Lough, Clonfinlough (N0329), 1♂ 19 September 2023, coll. & det. J. T. Brophy.

WATERFORD: Ballyscanlan (S5302), 1♀ 11 May 2024, light trap, T. Bryant.

***Limnephilus elegans* Curtis, 1834**

OFFALY: Killaun Bog (N1005), adult 11 May 2024, Rachel Mc Kenna, confirmed C. McNaughton (NBDC, 2025).

WATERFORD: Fenor Bog (S5301), 1♂ 2 June 2024, light trap, T. Bryant.

A female was previous collected in another part of Fenor Bog (S5201) in a light-trap in July 2019 by Alan Walshe (O'Connor and O'Connor, 2019).

***Limnephilus flavicornis* (Fabricius, 1787)**

DOWN: lake, Whitespots County Park (J4976), 1♂ 16 August 2024, S. Clawson (NBDC, 2025).

OFFALY: Coagh Upper near Birr (N1407), adult 13 June 2024, R. Mc Kenna (NBDC, 2025).

WATERFORD: Fenor Bog (S5301), light trap, 1♀ 23 July 2024, T. Bryant. Knockanduff (S5501), 1♂ 19 June 2024, T. Bryant.

***Limnephilus hirsutus* (Pictet, 1834)**

WATERFORD: Fenor Bog (S5301), 1♀ 23 July 2024, light trap, T. Bryant.

***Limnephilus incisus* Curtis, 1834 New to County Kilkenny**

KILKENNY: Loughmerans (S5059), 1♂2♀♀ 17 July 2023, coll. & det. J. T. Brophy.

***Limnephilus lunatus* Curtis, 1834**

CAVAN: Mullagh (N6984), adult 5 October 2024, M. Maher (NBDC, 2025).

CORK: Dungourney River, Midleton (W8873), larva 1 May 1997, P. Sweeney.

GALWAY: Esker, near Rosscahill (M1937), adult 23 September 2024, K. Synott.

LAOIS: River Nore, Tallyho Bridge (S4276), 25 May 2010, P. Sweeney.

MAYO: near Belcarra (M1884), adult 7 September 2024, G. Nee (NBDC, 2025).

WATERFORD: Fenor Bog (S5301), 1♀ 23 July 2024, light trap, T. Bryant. Great Newtown Head, Tramore (X5698), 1♂ 29 October 2024, light trap, T. Bryant.

WESTMEATH: Fardrum (N0839), adult 16 August 2024, D. McKay (NBDC, 2025).

***Limnephilus luridus* Curtis, 1834**

WATERFORD: Fenor Bog (S5301), 1♀ 23 July 2024, T. Bryant.

***Limnephilus marmoratus* Curtis, 1834**

CORK: Irish Distillers Mill Race, Midleton (W8873), larva 1 May 1997, P. Sweeney.

TIPPERARY: Cabragh Wetlands (S1055), adult 21 August 2024, light-trap, L. Garcia (NBDC, 2025). River Glengalla near Kildanogue (S0712), adult 14 August 2024, swept, L. Garcia (NBDC, 2025). River Suir near Ballybeg (S1316), adult 1 August 2024, (S1417) & adult 11 August 2024, light-trap, L. Garcia (NBDC, 2024).

WATERFORD: Tramore sandhills (S6100), 1♀ 31 August 2024, light trap, T. Bryant.

***Limnephilus pati* O'Connor, 1980 New to County Waterford (Fig. 1)**

WATERFORD: Fenor Bog (S5301), ♂ 23 July 2024, light trap, T. Bryant. Tramore saltmarsh (S6000), 1♀ 3 June 2024, light trap, T. Bryant.

Limnephilus pati is a rare and endangered species in Ireland, mainly associated with raised bogs and calcareous fens. Slow-flowing, shallow, well-vegetated streams with a reasonable calcium carbonate content are its principal breeding habitat at Market Weston Fen in England (O'Connor, Wallace and Sutton, 2024). Until now, the most recent Irish record was at the calcareous Pollardstown Fen, County Kildare (N7715) where a ♂ was taken in an emergence

trap at a limnocene tufa spring by Jervis Good on the 30 June 2003 (O'Connor, Good and Wallace, 2019).

It is exciting therefore that *L. pati* has now been trapped at Fenor Bog which is an alkaline fen located beside the Church in the tiny village of Fenor. The Irish Peatland Conservation Council, in association with the Móin Fhionnúrach Development Association purchased 32 acres (13ha) of Fenor Bog, near Tramore in Co Waterford in June 1999. Subsequently, it was declared a National Nature Reserve on the 28th May 2004. In Addition, it is Natural Heritage Area No. 1697 and an European Geopark.

The fen lies in a depression overlooked by Ballyscanlan Hill which rises to an elevation of 148m. (Plates 1 and 2). There is wet woodland dominated by willow and alder, undulating greater tussock sedge vegetation and flat wet wild flower areas. It is a naturally regenerating fen habitat, extremely rare nationally and internationally, supported by plentiful, unpolluted groundwater and air. It has a rich biodiversity with over 225 plants and animals and is a refuge for some of the only occurrences of plant and animal species that are found nowhere else in the county of Waterford. It has been described as the best dragonfly site in Waterford. There is 500m boardwalk which tracks through the variety of the habitats present (Irish Peatland Conservation Council (2025)). It is interesting to note that *L. hirsutus* is often found with *L. pati* and that this association is also true for Fenor Bog (see above record of *L. hirsutus*). *L. elegans*, another rare bogland species, also occurs there.

The female trapped on the Tramore saltmarsh may have originated in the nearby Castletown Fen (S6104). From aerial photographs, much of this fen is damaged through the planting of conifer trees but remnants of it would appear to provide suitable habitat for *L. pati*. It is only a little over 4km from where *L. pati* was trapped.

***Limnephilus sparsus* Curtis, 1834**

ANTRIM: Springfarm (J1488), 1♂ 30 August 2024 light-trap, R. Monteith.

DONEGAL: Rutland Island (B7113), 1♀ 6 May 2023, coll. & det. J. T. Brophy.

WATERFORD: Fenor Bog (S5301), 1♀ 2 June 2024, light trap, T. Bryant.

***Limnephilus vittatus* (Fabricius, 1798)**

OFFALY: Coagh Upper near Birr (N1407), adult 17 September 2024, light trap, R. McKenna (NBDC, 2025).

WICKLOW: Vartry Lower, west shore (O1902), 1♂ 19 June 2024, H. B. Feeley.

***Halesus digitatus* (Schrank, 1781)**

SLIGO: Doorly Park, Garvoe River (G7035), 1♀ 28 September 2024, R. Mitchell.

***Halesus radiatus* (Curtis, 1834)**

DONEGAL: near Drummenny River (G9478), 15 adults 9 October 2024, on house wall, S. Tanner, det. J. P. O'Connor from photograph (NBDC, 2025).

KILKENNY: River Nore, Ballyconra (S4472), larva 9 August 2005, P. Sweeney.

LIMERICK: near Killonahan (R5145), adult 11 October 2024, P. Punch (NBDC, 2025).

TIPPERARY: Cabragh Wetlands (S1055), adult 28 September 2024, L. Garcia (NBDC, 2025).

WICKLOW: Ballardbeg (T2497), adult 7 October 2024, W. Nairn, conf. C. McNaughton (NBDC, 2025).

***Potamophylax cingulatus* (Stephens, 1837)**

ANTRIM: Springfarm (J1488), 1♂ 22 September 2024, light-trap, R. Monteith.

***Potamophylax latipennis* (Curtis, 1834)**

ANTRIM: Springfarm (J1488), 1♂ 15 July 2024 & 1♂ 23 July 2024, light-trap, R. Monteith.

KILKENNY: Owenbeg River, near Coole (S4473), larva 7 May 2014, P. Sweeney.

***Stenophylax permistus* McLachlan, 1895**

ANTRIM: Springfarm (J1488), 1♂ 21 April 2024, light-trap, R. Monteith.

LIMERICK: Patrickswell (R5149), adult 4 May 2024, P. Punch (NBDC, 2025).

SERICOSTOMATIDAE

***Sericostoma personatum* (Spence, 1826)**

CLARE: River Fergus, Popular Bridge (R2791), 1♂1♀ 29 May 2024, H. B. Feeley.

MEATH: Dunshauglin Stream, Cookstown Bridge River (O0452), 1♂1♀ 18 July 2024, H. B. Feeley. Blackwater (Kells), Headford Bridge (N7675), 1♀ 8 July 2024, H. B. Feeley. River Boyne, upstream of the Knightsbrook River confluence (N8256), 1♂5♀ 10 July 2024, H. B. Feeley. River Boyne, Slane bridge (N9673), 1♂ 11 July 2024, H. B. Feeley.

OFFALY: Finnamore Lakes (N2120), adult 17 June 2024, R. Mc Kenna, identified J. P. O'Connor from photograph (NBDC, 2025). Killaun Bog (N1005), 1♀ 22 June 2024, R. Mc Kenna (NBDC, 2025).

SLIGO: Union Wood (G6828), 1♂1♀ 24 August 2024, R. Mitchell.

WICKLOW: Lough Dan (O1503), 2♂♂ 18 June 2024, H. B. Feeley.

BERAEIDAE

***Beraea maurus* (Curtis, 1834)**

CARLOW: River Barrow, Borris (S7150), 1♂ 12 July 2023, coll. & det. J. T. Brophy.

ODONTOCERIDAE

***Odontocerum albicorne* (Scopoli, 1763)**

CORK: Dungourney River, Middleton (W8873), larva 1 May 1997, P. Sweeney. Dungourney River, Roxborough (W9074), larva 1 May 1997, P. Sweeney.

SLIGO: Doorly Park, Garvoe River (G7035), 1♀ 28 September 2024, R. Mitchell.

MOLANNIDAE

***Molanna albicans* (Zetterstedt, 1840)**

FERMANAGH: Lower Lough Erne (H1656), larva 13 September 2013, P. Sweeney.

LEPTOCERIDAE

***Athripsodes albifrons* (Linnaeus, 1758)**

CARLOW: River Barrow, Bestfield (S7179), larva 19 May 2008, P. Sweeney.

OFFALY: Coagh Upper (N1407), adult 27 July 2024, R. Mc Kenna, det. J. P. O'Connor from photograph (NBDC, 2025).

***Athripsodes aterrimus* (Stephens, 1836)**

CAVAN: Murmod Bridge, stream from Cornaslieve Lough (N5988), 1 ♀ 3 July 2024, H. B. Feeley.

CLARE: Lough Bunny (R3897), adult 28 June 2024, R. Mc Kenna, det. J. P. O'Connor from photograph (NBDC, 2025).

***Athripsodes cinereus* (Curtis, 1834)**

ANTRIM: Lough Neagh, Randalstown (J0986), 1 ♂ 1 ♀ 20 July 2022, swept lake vegetation, R. Mitchell.

CAVAN: River Blackwater (Kells), bridge near Caracross (N6877), 4 ♂♂ 8 July 2024, H. B. Feeley. River Blackwater (Kells), bridge downstream of Parker's Bridge (N6396), 8 ♂♂ 2 ♀♀ 2 July 2024, H. B. Feeley. River Blackwater (Kells), Stramaquerty Bridge (N5992), 2 ♀♀ 3 July 2024, H. B. Feeley. River Blackwater (Kells), third bridge downstream of Castle Lough (N6598), 4 ♂♂ 2 July 2024, H. B. Feeley.

MEATH: Moynalty River, Cloggagh Bridge (N6791), 1 ♂ 1 ♀ 4 July 2024, H. B. Feeley. River Blackwater (Kells), Headford Bridge (N7675), 1 ♀ 8 July 2024, H. B. Feeley.

SLIGO: Doorly Park, Garvoge River (G7035), 2 ♂♂ 1 ♀ 22 June 2023, R. Mitchell,

***Ceraclea albimacula* (Rambur, 1842)**

ANTRIM: Lough Neagh, Randalstown (J0986), 1 ♂ 20 July 2022, swept lake vegetation, R. Mitchell.

CAVAN: River Blackwater (Kells), just upstream of Lough Ramor (N6087), 1 ♂ 3 July 2024, H. B. Feeley.

***Mystacides azurea* (Linnaeus, 1761)**

CARLOW: River Barrow, near Strawhall (S7178), larva 19 May 2008, P. Sweeney.

CORK: River Ilan tributary, Ballyhilty bridge (W1136), adult 13 August 2024, A. Haigh (NBDC, 2025).

DONEGAL: Lough Belshade (G9889), adult 24 June 2024, J. Cromie, det. J. P. O'Connor from photograph (NBDC, 2025).

KILDARE: Ballynafagh Bog (N8028), adult 10 May 2024, C. Lee (NBDC, 2025). Grand

Canal, Sallins (N8922), adult 23 May 2024, C. Mc Kenna (NBDC, 2025). Kellyville (S6194), adult 10 June 2024, C. Mc Kenna (NBDC, 2025).

MAYO: Castlebar River, Turlough (M2093), adult 28 July 2024, G. Nee (NBDC, 2025).

MEATH: Bellinter House near River Boyne (N8861), adult 7 September 2024, J. Brennan.

OFFALY: Finnamore Lakes (N2120), adult 6 May 2024, R. Mc Kenna, det. J. P. O'Connor from photograph (NBDC, 2025).

ROSCOMMON: Judy's Harbour, Carrownure Bay, Lough Ree (M9954), adult 24 May 2024, M. Bell (NBDC, 2025).

SLIGO: Union Wood (G6828), 1♂ 24 August 2024, R. Mitchell. Doorly Park, Garvoge River (G7035), 1♀ 22 June 2023, R. Mitchell.

TIPPERARY: River Suir, Clonmel (S2022), adult 24 August 2024, L. Garcia, det. J. P. O'Connor from photograph (NBDC, 2025).

WICKLOW: Vartry Lower, west shore (O1902), 7♂♂1♀ 19 June 2024, H. B. Feeley.

***Mystacides longicornis* (Linnaeus, 1758)**

ANTRIM: Lough Neagh, Randalstown (J0986), 1♂ 20 July 2022, swept lake vegetation, R. Mitchell.

CORK: Lough Aderry (W9473), adult 4 June 2024, P. M. Walsh (NBDC, 2025).

OFFALY: Coagh Upper near Birr (N1407), adult 17 June 2024, R. Mc Kenna (NBDC, 2025).

WICKLOW: Lough Bray Lower, south shore (O1315), 1♀ 19 June 2024, H. B. Feeley.

***Oecetis lacustris* (Pictet, 1834) New to County Sligo**

ANTRIM: Lough Neagh, Randalstown (J0986), 2♂♂ 20 July 2022, swept lake vegetation, R. Mitchell.

SLIGO: Doorly Park, Garvoge River (G7035), 2♂♂ 22 June 2023, R. Mitchell.

WATERFORD: Ballyscanlan (S5303), 1♀ 30 July 2024, light trap, T. Bryant. Carrickavrantry (S5501), 1♀ 29 July 2024, swept, T. Bryant.

***Oecetis notata* (Rambur, 1842)**

MEATH: River Boyne, downstream of the Broadboyne Bridge (N9271), 1♂ 11 July 2024, H. B. Feeley.

***Oecetis ochracea* (Curtis, 1825)**

ANTRIM: Lough Neagh, Randalstown (J0986), 1♂2♀♀ 20 July 2022, swept lake vegetation, R. Mitchell.

CLARE: Lough Bunney (R3897), adult 28 June 2024, R. Mc Kenna (NBDC, 2025).

OFFALY: Clooneen Bog (N0713), adult 22 June 2024, R. Mc Kenna (NBDC, 2025). Cranberry Bog (N1121), adult 27 August 2024, R. Mc Kenna (NBDC, 2025). Finnamore Lakes (N2120), adult 17 June 2024, R. Mc Kenna, det. J. P. O'Connor from photograph (NBDC, 2025).

***Oecetis testacea* (Curtis, 1834) New to County Antrim and County Sligo, new to Northern Ireland (Fig. 2)**

ANTRIM: Springfarm (J1488), 1♂ 15 July 2024, light-trap, R. Monteith.

CAVAN: River Blackwater (Kells), just upstream of Lough Ramor (N6087), 3♂♂ 3 July 2024, H. B. Feeley.

SLIGO: Doorly Park, Garvoge River (G7035), 2♂♂1♀ 22 June 2023, R. Mitchell.

***Triaenodes bicolor* (Curtis, 1834)**

DUBLIN: Grand Canal, Gollierstown (O0131), 1♂ 11 July 2023, coll. & det. J. T. Brophy.

***Ylodes reuteri* (McLachlan, 1880)**

WATERFORD: Tramore saltmarsh (S6000), 1♀ 3 June 2024, light trap, T. Bryant.

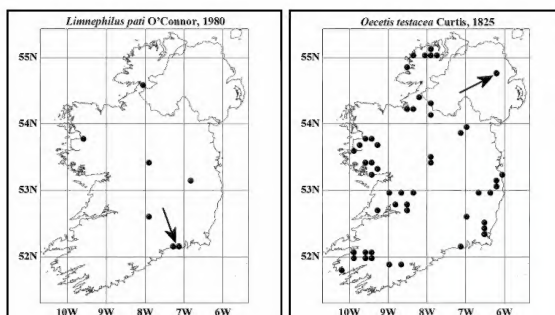
Acknowledgements

The senior author wishes to thank Oisín Duffy, Surveys and Records Officer with the National Biodiversity Data Centre, for making available the 2024 Trichoptera records received through the Citizen Science Portal; Alan Walshe and Paul M. Walsh for their photographs of Fenor Bog. Thanks are also due to the following recorders:- Michael Bell, John Brennan, Sam Clawson, Lawrence Cloake, Letizia Cocchiglia, John Cromie, Louise Garcia, Ann Haigh, Clare Hamilton, Bryan Kennedy, Caitriona Lee, Marcus Maher, Dave McKay, Chris Mc Kenna, Rachel Mc Kenna, Cathal McNaughton, Marie Muirhead, Wendy Nairn, Geraldine Nee, Padraig Punch, Kay Synott, Sue Tanner and Paul M. Walsh. Alan Morton kindly supplied the relevant software programme used for preparing the Irish distribution maps with DMAP.

References

- Edington, J. M. and Hildrew, A. G. (1995) A revised key to the caseless caddis larvae of the British Isles with notes on their ecology. *Scientific Publications of the Freshwater Biological Association* **No. 53**: 1-134.
- Irish Peatland Conservation Council (2025) Fenor Bog, Waterford, Visitor Map & Guide. <<https://www.ipcc.ie/visitor-attraction/ipccs-peatland-nature-reserves/fenor-bog-waterford-visitor-map-guide/>> (Accessed 1 January 2025)
- Little, R. and O'Connor, J. P. (2024) Records of Trichoptera collected for the biomonitoring of Ireland's lake network 2013-2018 and 2019-2021. *Bulletin of the Irish Biogeographical Society* **47**: 131-154.
- O'Connor, J. P. (2015) *A catalogue and atlas of the caddisflies (Trichoptera) of Ireland*. Occasional Publication of the Irish Biogeographical Society **Number 11**. viii + 646pp. Published by the Irish Biogeographical Society in association with the National Museum of Ireland.

- O'Connor, J. P. (2021) *Atlas of the Irish Trichoptera (Caddisflies)*. Occasional Publication of the Irish Biogeographical Society **Number 13**. 168pp. Published by the Irish Biogeographical Society in association with the Environmental Protection Agency.
- O'Connor, J. P. (2024) Caddisflies (Trichoptera) of Ireland, National Biodiversity Data Centre, Ireland. <<https://maps.biodiversityireland.ie/Dataset/250>>
- O'Connor, J. P., Bryant, A. and Monteith, R. (2024) Miscellaneous Irish caddisfly (Trichoptera) records. *Bulletin of the Irish Biogeographical Society* **47**: 185-194.
- O'Connor, J. P., Good, J. A. and Wallace, I. D. (2019) A new Irish locality for the rare caddisfly *Limnephilus pati* O'Connor (Trichoptera: Limnephilidae). *Entomologist's Record & Journal of Variation* **131**: 209-215.
- O'Connor, J. P. and O'Connor, M. A. (2019) New caddisfly (Trichoptera) data from Ireland including records for *Hydroptila lotensis* Mosely, 1930 and *Hydroptila vectis* Curtis, 1834. *Bulletin of the Irish Biogeographical Society* **43**: 57-122.
- O'Connor, J. P., O'Connor, M. A. and Feeley, H. B. (2024) New records of Irish caddisflies (Trichoptera) in 2014, 2021, 2022 & 2023. *Bulletin of the Irish Biogeographical Society* **47**: 64-76.
- O'Connor, J. P., Wallace, I. D. and Sutton, R. D. (2024) An aid for identifying adults of *Limnephilus pati* O'Connor (Trichoptera: Limnephilidae). *Bulletin of the Irish Biogeographical Society* **47**: 94-116.
- Wallace, I., Flint, S. and Flint, P. (2022) *Adult caddis (Trichoptera) of Britain and Ireland: a practical guide*. AIDGAP. Field Studies Council, Telford.
- Wallace, I. D., Wallace, B. and Philipson, G. N. (2003) Keys to the case-bearing caddis larvae of Britain and Ireland. *Scientific Publications of the Freshwater Biological Association* **No. 61**: 1-259.



FIGURES 1-2. The known Irish distributions of *Limnephilus pati* and *Oecetis testacea*. The new county records are indicated by arrows.



PLATE 1. Views of Fenor Bog, County Waterford. Above. The pond on the southern side. Below. Looking north from the walkway. 28 January 2025. Photographs: Alan Walshe.



PLATE 2. Views of Fenor Bog, County Waterford. 30 January 2025. Photographs: Paul M. Walsh.

***NAIS COMMUNIS* PIGUET, 1906 (OLIGOCHAETA: NAIDIDAE), MICROHABITAT AND OCCURRENCE IN SOUTHERN IRELAND**

Pascal Sweeney

Sweeney Consultancy, Rahan, Mallow, Co. Cork, Ireland.

e-mail: <sweeneyconsultancy@gmail.com>

Abstract

For many years, there has been some confusion concerning the identification and status of *Nais communis* Piguet, 1906 (Oligochaeta: Naididae) in Ireland, where there was only one verifiable record of this small oligochaete worm until the chance discovery in 2023 of 26 specimens within the structure of the case of a larva of *Limnephilus marmoratus* Curtis 1834 (Trichoptera: Limnephilidae). Further investigations were undertaken into its occurrence in this microhabitat. A total of 219 *Limnephilus flavicornis/marmoratus* cases from 47 sampling sites in Munster and South Leinster was examined. *N. communis* was recorded at 21 sites, across ten counties and its occurrence suggests a commensal, rather than an accidental relationship with *Limnephilus flavicornis* (Fabricius, 1787) and *L. marmoratus* larvae.

Key words: *Nais communis*, Oligochaeta, Naididae, *Limnephilus flavicornis*, *Limnephilus marmoratus*, Trichoptera, microhabitat, commensal, occurrence, larval cases.

Introduction

Of the one hundred aquatic oligochaete species whose presence in Ireland has been confirmed, fifteen belong to the genus *Nais* (Naididae) (Sweeney, 2016). Among these, some confusion has occurred in the identifications of two similar congeners *N. communis* Piguet, 1906 and *N. christinae* Kasprzak, 1973. The main obvious external difference between preserved specimens of these two small worms (length 1.5mm-12mm) is the angle between the teeth of the anterior ventral crotchets (Timm and Veldhuijzen van Zanten, 2002). Because the first description of *N. christinae* was not until 1973, it was not included in the commonly used identification guide to aquatic oligochaetes by Brinkhurst (1971). *N. communis* was first recorded on Clare Island, County Mayo, by Southern (1913). This record seems to have led to an erroneous statement in the Freshwater Biological Association identification guide to aquatic oligochaetes (Brinkhurst, 1971), that *N. communis* had been recorded in County Clare, which is the only mention in this guide to an Irish location for any of the five species of this genus with bifid dorsal crotchets. This, combined with the absence of *N. christinae* from the guide, led to many misidentifications. A specimen, collected in 1978 in Lough Leane, Killarney, County Kerry, by the author and initially identified as *N. communis*, was corrected to *N. christinae* in 2002 by Tarmo Timm (Estonian University of Life Sciences) and deposited in NMINH. Specimens on a

microscope slide, described as *N. communis* by O'Grady *et al.* (1979) were available for examination and were found to be *Dero digitata* (Müller, 1774) with the hind ends missing and therefore without the diagnostic posterior gills of the latter species. On recent examination, a specimen labelled "*Nais communis*" in the possession of NMNH, which had been prepared by Roland Southern, was found to be *N. elinguis* Müller, 1774, casting doubt on his Clare Island *N. communis* record. On 22 April, 2002, a single specimen of *N. communis* was collected in the River Barrow at Carlow Town (Sweeney, 2016) and was verified by Tarmo Timm. Until 2023, this remained the only verifiable record of *N. communis* in Ireland, despite checking for its presence at other sites along the River Barrow.

On 7 March, 2023, an invertebrate sample was taken from a drain running from a constructed wetland to the River Barrow upstream of Goresbridge, County Carlow. While identifying a single larval specimen of the cased caddis *Limnephilus marmoratus* Curtis, 1834 from the sample, it was noticed that a very small oligochaete was protruding from between the plant fragments of which the case was constructed. This was identified as *N. communis*. On dismantling the case, a further 25 specimens of *N. communis* were found within the interstices of the case wall. This discovery of the presence of *N. communis* living within the wall of a limnephilid case added to the intrigue associated with the status and distribution of this species in Ireland, warranting a further examination of caddis cases to check for the species.

Methods

From March 2023 to February 2025, at 47 sites in Munster and South Leinster, larval cases of several caddis species from still water and slow-flowing aquatic habitats were examined, with particular focus on the congeners *Limnephilus flavicornis* (Fabricius, 1787) and *L. marmoratus*, which have very loose case structures, with pieces of plant material arranged tangentially, resulting in many very small spaces within the case wall (Plate 1). To accurately separate these two caddis species at larval stage, ratios of measurements taken from the head and prosternite, as described by Wallace *et al.* (2003), are required. Furthermore, many of the caddis larvae collected in the study left their cases on being placed in alcohol, making it impossible, in a vial of cases and larvae, to determine the species in which case an oligochaete specimen was found. Therefore, only in a small sample where *N. communis* had been found in an occupied case, was species level identification of these caddis done, and others were recorded as *L. flavicornis/marmoratus*. On occasions where none or few *L. flavicornis/marmoratus* larvae were found, particularly during the summer months, when *L. flavicornis* and *L. marmoratus* are at adult stage of their life cycles (O'Connor, 2020), the cases of four other caddis species of the Family Limnephilidae:- *Limnephilus rhombicus* (Linnaeus, 1758), *Chaetopteryx villosa* (Fabricius, 1798), *Anabolia nervosa* (Curtis, 1834) and *Halesus radiatus* (Curtis, 1834), which have somewhat loose case structures, were also

checked for the presence of oligochaetes. Caddis cases were dismantled using fine forceps under a dissecting microscope (Plate 2). A total of 219 *L. flavicornis/marmoratus* cases and 35 cases of other Limnephilidae were examined. Oligochaetes found were mounted on glass slides and identified using the keys of Timm and Veldhuijzen van Zanten, (2002) and/or Van Haaren and Soors (2013).

Results

Oligochaetes were not found in cases of caddis other than *Limnephilus flavicornis/marmoratus*. *Nais communis* was found at 21 of the 47 sampling sites and in 48 of the 219 *L. flavicornis/marmoratus* cases examined. Eight of these cases also contained other oligochaete species. A further seven cases contained only oligochaetes other than *N. communis*.

Nais communis* records in cases of *Limnephilus flavicornis/marmoratus

County Carlow

Drain to River Barrow (S6837 5450), 7 March 2023, 1 *L. marmoratus*, 26 *N. communis*.

River Barrow, upstream of Bagenalstown weir (S7073 6234), 17 January 2025, 13 *L. flavicornis/marmoratus*, 1 *N. communis*.

County Clare

Ballyallia Lough (R3466 8085), 12 November 2024, 10 *L. flavicornis/marmoratus*, 5 *N. communis* in 3 cases.

Lough Inchiquin (R2757 8946), 12 November 2024, 8 *L. flavicornis/marmoratus*, 3 *N. communis* in 3 cases.

County Cork

Ballybeg Pond, Buttevant (R5433 0753), 11 March 2024, 1 *L. flavicornis/marmoratus*, 2 *N. communis*.

Monanimy Pond, Killavullen (R6516 0077), 28 December 2024, 22 *L. flavicornis/marmoratus*, 12 *N. communis* in 6 cases.

River Lee, Lee Fields, Cork City (W6439 7145), 30 December 2024, 1 *L. flavicornis/marmoratus*, 1 *N. communis*.

The Gearagh (W6439 7145), 2 February, 2025, 5 *L. flavicornis/marmoratus*, 2 *N. communis* in 1 case.

County Kerry

Caragh Lough (V7031 8827), 13 January 2025, 10 *L. flavicornis/marmoratus*, 3 *N. communis* in 3 cases.

Lough Currane (V5099 6563), 21 January 2025, 9 *L. flavicornis/marmoratus*, 27 *N. communis* in 8 cases.

Lough Leane (V9754 8774), 27 January 2025, 6 *L. flavicornis/marmoratus*, 1 *N. communis*.
Muckross Lake (V9656 8579), 27 January 2025, 10 *L. flavicornis/marmoratus*, 2 *N. communis*
in 2 cases.

County Kildare

River Barrow, upstream of Athy weir (S6833 9336), 17 January 2025, 9 *L. flavicornis/marmoratus*, 1 *N. communis*.

County Kilkenny

Lough Cullin (X6129 1861), 29 December 2024, 15 *L. flavicornis/marmoratus*, 1 *N. communis*.

County Tipperary

River Suir upstream of Cahir Weir (S0513 2498), 22 November 2024, 9 *L. flavicornis/marmoratus*, 2 *N. communis* in 2 cases.

River Suir upstream of Clonmel Weir (S2012 2222), 22 November 2024, 1 *L. flavicornis/marmoratus*, 1 *N. communis*.

River Suir upstream of Holycross Weir (S0905 5417), 12 December 2024, 1 *L. flavicornis/marmoratus*, 1 *N. communis*.

Silver Stream (R9412 9421), 5 November 2024, 11 *L. flavicornis/marmoratus*, 3 *N. communis*
in 3 cases.

County Waterford

Knockaderry Reservoir (S4984 0649), 28 December 2024, 22 *L. flavicornis/marmoratus*, 1 *N. communis*.

County Wexford

Ballykelly Lake (X6129 2122), 31 December, 2024, 18 *L. flavicornis/marmoratus*, 13 *N. communis* in 6 cases.

County Wicklow

River Slaney upstream of Baltinglass Weir (S8662 8884), 3 May 2024, 1 *L. flavicornis/marmoratus*, 1 *N. communis*.

Three *L. flavicornis* and seven *L. marmoratus* larvae were identified from 10 caddis cases containing *N. communis* at the following sites.

Limnephilus flavicornis

Ballyallia Lough (R3466 8085), 12 November 2024.

Lough Inchiquin (R2757 8946), 12 November 2024.

Muckross Lake (V9656 8579), 27 January 2025.

Limnephilus marmoratus

Ballybeg Pond, Buttevant (R5433 0753), 11 March 2024.

Ballykelly Lake (X6129 2122), 31 December, 2024.

Caragh Lough (V7031 8827), 13 January 2025.

Drain to River Barrow (S6837 5450), 7 March 2023.

Knockaderry Reservoir (S4984 0649), 28 December 2024.

Lough Currane (V5099 6563), 21 January 2025.

Lough Leane (V9754 8774), 27 January 2025.

A total of 30 specimens from seven other oligochaete taxa were found in cases of *L. flavicornis/marmoratus* across ten sites.

The maximum length of *N. communis* specimens found in this study was c. 2.3mm.

Discussion

On continental Europe, *Nais communis* has been found in colonies of Bryozoa and Porifera (Van Haaren and Soors, 2013). However, its association with cased caddis larvae has, up until now, been unknown (Tarmo Timm, pers. comm.). Of the 47 sites sampled in this study, *N. communis* was found in *Limnephilus flavicornis/marmoratus* cases at 21 sites (44.7% occurrence). If seven sites sampled during the summer period, when *L. flavicornis* and *L. marmoratus* are at the adult stage of their life cycles, are excluded, the occurrence rises to 52.5% of sites, with an average of 2.3 *N. communis* per case. This compares with an average of 0.14 individuals per case for a combination of all the other seven oligochaete species found. After *N. communis*, the species with the next highest occurrence in *L. flavicornis/marmoratus* cases was *N. christinae*, with 15 individuals (0.07 per case). These data suggest a commensal, rather than an accidental relationship between *N. communis* and *L. flavicornis/marmoratus*.

N. communis has now been verifiably recorded in Counties Carlow, Clare, Cork, Kerry, Kilkenny, Tipperary, Waterford, Wexford and Wicklow.

As no oligochaetes were found in empty cases during the summer months, when *L. flavicornis* and *L. marmoratus* are at the adult stage of their life cycles, it must be presumed that either small *N. communis* utilise other microhabitats or that *N. communis* does not reproduce during this period. The single *N. communis* found on 22 April, 2002 was less than 2.5mm long, like all the specimens found in this survey, and, although it was found free in the sorting-tray, it was in an invertebrate sample that included several *L. flavicornis/marmoratus* larvae. As Timm (1999) gives a length range of *N. communis* of 1.5 mm to 12 mm, this raises the question as to where larger specimens are to be found. It is possible that some of the earlier identifications of *N. communis* were correct and that recently these small pale worms have often been overlooked.

The records in this paper will be sent to the National Biodiversity Data Centre.

Acknowledgements

I wish to thank the National Parks and Wildlife Service for the provision of a grant for this project under Small Recording Projects 2024. I also wish to thank Aideen Kane for collecting

caddis specimens at four sites in the southeast.

References

- Brinkhurst, R. O. (1971). A guide for the identification of British aquatic Oligochaeta, 2nd edition. *Scientific Publication of the Freshwater Biological Association* **No. 22**.
- O'Connor, J. P. (2020) *A National Grid Atlas of the Irish Caddisflies (Trichoptera)*. Occasional Electronic Publication **Number 1**. Irish Biogeographical Society, Dublin. 194pp.
<<http://www.irishbiogeographicalsociety.com/pdf/IBSNationalgridatlasIrishcaddisfliestrichoptera.pdf>>.
- O'Grady, M. F., O'Connor, J. P. and Champ, W. S. T. (1979). Preliminary notes on Irish lake Oligochaeta. *Irish Naturalists' Journal* **19**: 323-326.
- Southern, R. (1913) Clare Island Survey. 48. Oligochaeta. *Proceedings of the Royal Irish Academy* **31**(48): 1-15.
- Sweeney, P. (2016) Current status of aquatic Oligochaeta in Ireland. *Bulletin of the Irish Biogeographical Society* **40**: 3-17.
- Timm, T. (1999) *Eesti rõngusside (Annelida) määraja; a guide to the Estonian Annelida*. Looduseuurija käsiraamatud. Naturalist's Handbooks **1**.
- Timm, T. and Veldhuijzen van Zanten, H. H. (2002). *Freshwater Oligochaeta of north-west Europe*. World Biodiversity Database CD-ROM Series. UNESCO-Publishing, Paris.
- Van Haaren, T. and Soors, J. (2013) *Aquatic Oligochaeta of the Netherlands and Belgium*. K.N.N.V. Publishing, Zeist, The Netherlands.
- Wallace, I. D., Wallace, B. and Philipson, G. N. (2003) Keys to the case-bearing caddis larvae of Britain and Ireland. *Scientific Publication of the Freshwater Biological Association* **No. 61**.



PLATE 1. *Limnephilus marmoratus* larva in case. Photograph: Pascal Sweeney.



PLATE 2. *Nais communis* in dismantled case of *Limnephilus flavicornis/marmoratus* larva. Photograph: Pascal Sweeney.

RECORDS OF TRICHOPTERA COLLECTED FOR THE BIOMONITORING OF IRELAND'S LAKE NETWORK 2022-2024

Ruth Little¹ and James P. O'Connor²

¹*Environmental Protection Agency, Inniscarra, Co. Cork, P31 VX59, Ireland.*

e-mail: <r.little@epa.ie>

²*National Museum of Ireland - Natural History, Merrion Street, Dublin 2, D02 F627, Ireland.*

e-mail: <joconnor@museum.ie>

Abstract

Records of Trichoptera are reported from Irish lakes collected as part of the EU Water Framework Directive monitoring programme. Larval material was collected during 2022-2024. Only new monad, hectad and county records are noted.

Key words: Trichoptera, caddisflies, larvae, Ireland, new records, distribution, lakes.

Introduction

The Environmental Protection Agency conducts the national Water Framework Directive monitoring programme in Ireland (e.g. EPA 2021, 2023) by which river and lake water quality and trends are assessed with respect to ecological criteria and to physico-chemical water quality standards. This work includes the sampling of aquatic invertebrates in 117 lakes under the Acid Lakes and Surveillance Lake Monitoring Programme. Fourteen acid lakes are sampled annually and the remaining lakes are sampled once every three years.

The Trichoptera data, reported here, are from 2022-2024. Data from 2013-2021 will be found in Little and O'Connor (2024). Only new monad (1km²), hectad (10km²) and county records from these data are noted in this paper. Four figure (1km²) Irish grid references are given for each new record.

Ruth Little identified the larvae using Edington and Hildrew (1995) and Wallace *et al.* (2003). Identifications to species level are only included. It was often not possible to identify many immature larval stages as they were very small and the key characteristics had not yet developed. In addition, only *Tinodes waeneri* (Linnaeus, 1758) is included as the larval key for the other species of *Tinodes* is unreliable. *Polycentropus* was also not speciated due to problems with the claw angle and other characteristics.

Addendum 12

The records in this paper will be included in Addendum 12 for the dataset "Caddisflies (Trichoptera) of Ireland" of the National Biodiversity Data Centre <<https://maps.biodiversityireland.ie/Dataset/250>>. The data will also be provided to CEDaR.

Records

GLOSSOSOMATIDAE

***Agapetus fuscipes* Curtis, 1834**

GALWAY: Lough Corrib Lower, Annagh Point (M2531), 2 larvae 12 April 2024. Lough Corrib Upper, Inismicatreeer (M1749), larva 12 April 2024.

LEITRIM: Lough Melvin, Breffni Pier (G8853), larva 4 April 2023.

***Glossosoma boltoni* Curtis, 1834**

MAYO: Lough Acorrymore (F5705), larva 18 April 2023, the specimen may have originated in the outflowing Mill Stream.

ECNOMIDAE

***Ecnomus tenellus* (Rambur, 1842)**

CLARE: Lough Alewnaghta (R7691), larva 24 April 2024. Lough Cullaun (R3190), larva 24 April 2024.

CORK: Lough Glenbeg (V7053), 3 larvae 18 April 2023. Lough Allua (W1865), larva 17 April 2023.

DONEGAL: Lough Kindrum (C1943), 2 larvae 16 April 2024.

GALWAY: Lough Corrib Lower, Curra (M2534), larva 16 April 2024.

ROSCOMMON: Lough Cavetown (M8397), larva 12 April 2022. Lough O'Flynn (M5879), 2 larvae 11 April 2022.

TIPPERARY: Lough Derg, Gortmore Point (M8401), 2 larva 24 April 2023.

POLYCENTROPODIDAE

***Cyrnus flavidus* McLachlan, 1864**

KERRY: Lough Cam (Q5907), 14 larvae 25 April 2022.

***Cyrnus trimaculatus* (Curtis, 1834)**

CAVAN: Lough Mushlin (H6201), 6 larvae 29 April 2022.

DONEGAL: Lough Kindrum (C1943), larva 16 April 2024. Lough Anure (B8116), 2 larvae 15 April 2024. Lough Barra (B9212), larva 18 April 2024. Lough Mourne (H0790), 10 larvae 25 April 2024.

GALWAY: Lough Nahasleam (L9744), larva 20 April 2023.

MAYO: Lough Aille (M0780), 5 larvae 20 April 2023. Lough Moher (L9777), larva 20 April 2023.

ROSCOMMON: Lough O'Flynn (M5879), 15 larvae 11 April 2022.

WESTMEATH: Lough Lene (N5368), larva 11 April 2022.

***Holocentropus dubius* (Rambur, 1842)**

CLARE: Lough Atedaun (R2988), larva 25 April 2024.

DONEGAL: Lough Barra (B9212), larva 29 March 2023.

SLIGO: Templehouse Lake (G6118), larva 26 April 2022.

***Holocentropus picicornis* (Stephens, 1836)**

CLARE: Lough Dromore (R3485), larva 23 April 2024. Lough Atedaun (R2988), 3 larvae 25 April 2024.

***Plectrocnemia conspersa* (Curtis, 1834)**

DONEGAL: Lough Kiltorris (G6797), 3 larvae 15 April 2024. Lough Nasnanida (B8507), larva 15 April 2024. Lough Beagh (Veagh) (C0221), larva 14 April 2022 & larva 29 March 2023.

GALWAY: Ballynahinch Lake (L7847), larva 19 April 2022.

WICKLOW: Upper Lake, Glendalough (T0996), larva 5 April 2022 & larva 21 April 2023.

***Plectrocnemia geniculata* McLachlan, 1871**

WICKLOW: Upper Lake, Glendalough (T1096), larva 17 April 2024.

PSYCHOMYIIDAE

***Lype phaeopa* (Stephens, 1836)**

CAVAN: Lough Macnean Upper (H0238), larva 27 April 2022.

***Lype reducta* (Hagen, 1868) New to County Galway**

GALWAY: Lough Ballynakill (L6457), 3 larvae 29 April 2022. Lough Illauntrasna (L8825), larva 12 April 2022.

***Psychomyia fragilis* (Pictet, 1834)**

GALWAY: Lough Corrib Upper, Inismicatree (M1749), 28 larvae 12 April 2024.

***Tinodes waeneri* (Linnaeus, 1758)**

CLARE: Doo Lough (R1172), larva 19 April 2023.

DONEGAL: Lough Derg (H0973), larva 24 April 2024. Lough Mourne (H0790), larva 25 April 2024.

GALWAY: Ardderry Lough (L9845), larva 13 April 2022. Ballynahinch Lake (L7847), 2 larvae 19 April 2022. Pollacappul Lough (L7558), 2 larvae 28 April 2022.

PHRYGANEIDAE

***Agrypnia obsoleta* (Hagen, 1864)**

WICKLOW: Lough Dan (O1502), larva 17 April 2023.

***Agrypnia varia* (Fabricius, 1793)**

MAYO: Lough Moher (L9777), 3 larvae 20 April 2023.

***Phryganea bipunctata* Retzius, 1783**

ROSCOMMON: Lough Annaghmore (M9083), larva 12 April 2022.

WESTMEATH: Annagh (White) Lake (N5172), larva 11 April 2022.

GOERIDAE

***Goera pilosa* (Fabricius, 1775)**

DONEGAL: Lough Akibbon (C0719), larva 17 April 2024.

FERMANAGH: Lough Erne Upper, Derryvore Jetty (H3423), larva 5 April 2023.

ROSCOMMON: Lough Meelagh (G9011), larva 12 April 2022.

LEPIDOSTOMATIDAE

***Lepidostoma hirtum* (Fabricius, 1775)**

CAVAN: Lough Derrybrick (H3511), 4 larvae 4 April 2023.

CLARE: Lough Lickeen (R1690), 6 larvae 17 April 2024.

GALWAY: Lough Aughrusbeg (L5558), 7 larvae 29 April 2022.

KERRY: Lough Brin (V7877), 5 larvae 20 April 2023.

APATANIIDAE

***Apatania muliebris* McLachlan, 1866**

KERRY: Lough Brin (V7877), larva 20 April 2023.

LIMNEPHILIDAE

***Chaetopteryx villosa* (Fabricius, 1798)**

WICKLOW: Lough Tay (O1607), 5 larvae 26 April 2024

***Anabolia nervosa* (Curtis, 1834)**

CAVAN: Lough Derrybrick (H3511), larva 4 April 2023.

DONEGAL: Lough Glen (C0928), 5 larvae 16 April 2024.

FERMANAGH: Lough Erne Upper, Cornaleck slip (H2931), larva 5 April 2023. Lough Macnean Lower (H0938), 8 larvae 27 April 2022.

***Limnephilus auricula* Curtis, 1834**

TIPPERARY: Lough Derg, Gortmore Point (M8401), larva 24 April 2023.

***Limnephilus centralis* Curtis, 1834**

ROSCOMMON: Lough Meelagh (G9011), larva 12 April 2022.

***Limnephilus lunatus* Curtis, 1834**

CAVAN: Lough Derrybrick (H3511), larva 4 April 2023. Lough Skeagh Upper (H6500), larva 26 April 2024.

CLARE: Lough Cullaun (R3190), larva 24 April 2024. Lough Naminna (R1871), larva 11

April 2022.

DONEGAL: Lough Glen (C0928), 2 larvae 16 April 2024. Lough Kindrum (C1943), larva 16 April 2024. Lough Anure (B8116), larva 15 April 2024. Lough Derg (H0973), larva 24 April 2024. Lough Gartan (C0616), 2 larvae 17 April 2024.

FERMANAGH: Lough Erne Upper, Derryvore Jetty (H3423), 2 larvae 5 April 2023.

GALWAY: Lough Nahasleam (L9744), larva 14 April 2022.

KERRY: Lough Brin (V7877), larva 20 April 2023.

ROSCOMMON: Lough Annaghmore (M9083), 6 larvae 12 April 2022.

SLIGO: Lough Arrow, East shore (G7913), 2 larvae 10 April 2024.

WESTMEATH: Annagh (White) Lough (N5172), 18 larvae 11 April 2022.

***Limnephilus vittatus* (Fabricius, 1798)**

CAVAN: Lough Derrybrick (H3511), 68 larvae 4 April 2023.

FERMANAGH: Lough Erne Upper, Druguiff Cross (H3430), larva 5 April 2023, Upper Cornaleck slip (H2931), larva 5 April 2023.

***Halesus radiatus* (Curtis, 1834)**

CLARE: Lough Inchicronan (R3985), larva 23 April 2024.

DONEGAL: Lough Derg (H0973), larva 24 April 2024. Lough Glen (C0928), larva 16 April 2024.

GALWAY: Lough Corrib Upper, Cappacorroe (M1353), larva 16 April 2024. **MAYO:** Carrowmore Lake (F8328), larva 26 April 2023. Lough Moher (L9777), larva 20 April 2023.

SLIGO: Lough Easky (G4423), larva 19 April 2023.

WESTMEATH: Lough Lene (N5368), larva 11 April 2022.

***Mesophylax impunctatus* McLachlan, 1884**

SLIGO: Lough Arrow, Castlebaldwin (G7811), larva 10 April 2024.

***Potamophylax cingulatus* (Stephens, 1837)**

CLARE: Lough Naminna (R1871), larva 11 April 2022 & larva 19 April 2023.

SERICOSTOMATIDAE

***Sericostoma personatum* (Spence, 1826)**

DONEGAL: Lough Beagh (Veagh) (C0221), larva 29 March 2023.

FERMANAGH: Lough Melvin, Fishing Club (G9353), larva 4 April 2023.

KERRY: Lough Caragh (V7290), larva 26 April 2023. Upper Lake, Newfoundland Bay (V9282), larva 25 April 2022 & 2 larvae 20 April 2023.

WICKLOW: Upper Lake, Glendalough (T0996), 2 larvae 5 April 2022.

MOLANNIDAE

***Molanna albicans* (Zetterstedt, 1840)**

CAVAN: Lough Macnean Upper (H0238), larva 27 April 2022.

LEPTOCERIDAE

***Adicella reducta* (McLachlan, 1865)**

GALWAY: Lough Ballynakill (L6457), 3 larvae 29 April 2022. Illauntrasna Lough (L8825), larva 12 April 2022.

***Athripsodes aterrimus* (Stephens, 1836) New to County Limerick**

CLARE: Lough Atedaun (R2988), larva 25 April 2024.

LIMERICK: Lough Gur (R6441), larva 22 April 2024.

SLIGO: Templehouse Lake (G6118), larva 26 April 2022.

***Athripsodes cinereus* (Curtis, 1834)**

DONEGAL: Lough Veagh (Beagh) (C0221), larva 29 March 2023.

SLIGO: Lough Arrow, east shore (G7913), larva 10 April 2024. Lough Easky (G4423), larva 26 April 2022.

TIPPERARY: Lough Derg, Gortmore Point (M8401), 5 larvae 24 April 2023.

***Ceraclea albimacula* (Rambur, 1842)**

GALWAY: Lough Corrib Lower, Curra (M2534), larva 16 April 2024.

***Ceraclea annulicornis* (Stephens, 1836)**

GALWAY: Lough Corrib Lower, Annagh Point (M2531), larva 12 April 2024.

***Ceraclea fulva* (Rambur, 1842)**

GALWAY: Lough Ballynakill (L6457), larva 29 April 2022.

***Ceraclea nigronervosa* (Retzius, 1783)**

GALWAY: Lough Corrib Upper, Cappacorroe (M1353), larva 16 April 2024.

***Ceraclea senilis* (Burmeister, 1839)**

MONAGHAN: Annagh (White) Lake, Rockcorry (H6719), larva 26 April 2022.

***Leptocerus tineiformis* Curtis, 1834**

CAVAN: Lough Corglass (H3409), 2 larvae 5 April 2023.

***Mystacides azurea* (Linnaeus, 1761)**

CLARE: Lough Cullaun (R3190), larva 24 April 2024.

DONEGAL: Lough Kiltorris (G6797), larva 15 April 2024.

GALWAY: Ballynakill Lough (L6457), larva 29 April 2022.

SLIGO: Lough Arrow, Hollybrook (G7811), larva 10 April 2024. Lough Arrow, East shore (G7913), larva 10 April 2024. Lough Gill, Sligo Anglers Pontoon (G7132), larva 10 April 2024.

WICKLOW: Lough Tay (O1607), 3 larvae 26 April 2024. Upper Lake, Glendalough (T0996),

2 larvae 5 April 2022.

***Mystacides longicornis* (Linnaeus, 1758)**

GALWAY: Lough Corrib Upper, Coosaun (M0648), larva 16 April 2024. Loughanillaun, Maam Cross (L9746), 2 larvae 13 April 2022.

KERRY: Lough Acoose (V7585), larva 26 April 2023. Lough Brin (V7877) larva 20 April 2023. Lough Cam (Q5907), 2 larvae 25 April 2022. Lough Caragh (V7290), 2 larvae 26 April 2023.

MONAGHAN: Lough Muckno (H8319), 2 larvae 26 April 2022.

ROSCOMMON: Lough Meelagh (G9011), larva 12 April 2022.

SLIGO: Lough Arrow, Holybrook (G7811), 3 larvae 10 April 2024.

WICKLOW: Lough Tay (O1607), 3 larva 26 April 2024. Upper Lake, Glendalough (T0996), 6 larvae 5 April 2022.

***Oecetis furva* (Rambur, 1842)**

CLARE: Lough Cullaun (R3190), 1 larva 24 April 2024.

***Oecetis ochracea* (Curtis, 1825)**

CLARE: Lough Muckanagh (R3792), 2 larvae 24 April 2024.

***Oecetis testacea* (Curtis, 1834)**

CLARE: Lough Dromore (R3485), larva 23 April 2024.

GALWAY: Lough Beaghcauneen (L6847), larva 20 April 2022.

***Triaenodes bicolor* (Curtis, 1834)**

FERMANAGH: Lough Erne Upper, Cornaleck slip (H2931), larva 5 April 2023.

Acknowledgements

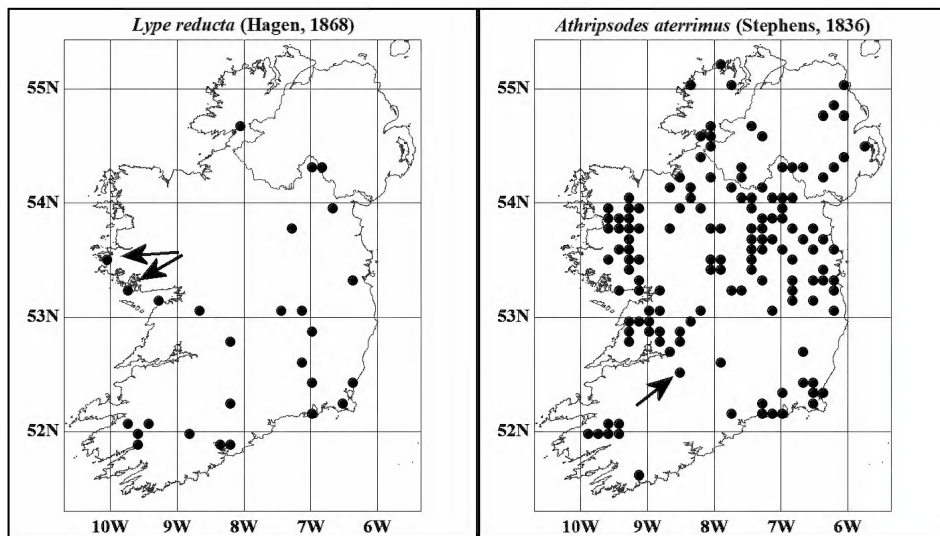
The authors wish to thank the numerous EPA staff who collected the samples, the undergraduate students for sorting samples and Alan Morton for the relevant software programme used for preparing the Irish distribution maps with DMAP.

References

- Edington, J. M. and Hildrew, A. G. (1995) A revised key to the caseless caddis larvae of the British Isles with notes on their ecology. *Scientific Publications of the Freshwater Biological Association* **No. 53**: 1-134.
- EPA (2021) <[https://www.epa.ie/publications/monitoring--assessment/freshwater--marine/EPA_WFD_MonitoringProgramme_2019_2021-\(1\).pdf](https://www.epa.ie/publications/monitoring--assessment/freshwater--marine/EPA_WFD_MonitoringProgramme_2019_2021-(1).pdf)>
- EPA (2023) <https://www.epa.ie/publications/monitoring--assessment/freshwater--marine/EPA_WFD_MonitoringProgramme_2022_2027.pdf>
- Little, R. and O'Connor, J. P. (2024) Records of Trichoptera collected for the biomonitoring of Ireland's lake network 2013-2018 and 2019-2021. *Bulletin of the Irish*

Biogeographical Society **47**: 131-154.

Wallace, I. D., Wallace, B. and Philipson, G. N. (2003) Keys to the case-bearing caddis larvae of Britain and Ireland. *Scientific Publications of the Freshwater Biological Association* **No. 61**: 1-259.



FIGURES 1-2. The known Irish distributions of *Lype reducta* and *Athripsodes aterrimus*. The new county records are indicated by arrows.

NEW IRISH CADDISFLY (TRICHOPTERA) RECORDS MAINLY FROM THE EPA RIVERS SURVEY (2007-2018) AND BIOBLITZ

James P. O'Connor

National Museum of Ireland - Natural History, Merrion Street, Dublin 2, D02 F627, Ireland.

e-mail: <joconnor@museum.ie>

Abstract

Unpublished Irish caddisfly (Trichoptera) records are provided from the Environmental Protection Agency (EPA) rivers survey (2007-2018) and from BioBlitz (2002-2022). Counties are given for the rivers survey sites. Some miscellaneous data are also included. New county records are noted.

Keywords: Trichoptera, caddisflies, Ireland, new records, distribution, Environmental Protection Agency, rivers survey, BioBlitz.

Introduction

The data set “Caddisflies (Trichoptera) of Ireland” (O'Connor, 2024) of the National Biodiversity Data Centre currently contains 19119 verified records of 156 species from 1203 sites. The most recent update is Addendum 10, added in 2024 (O'Connor, 2024). Two further Addenda (11 and 12) are awaiting upload to the data set. The data in this paper will be included in Addendum 13.

One data set of the Centre is not represented in the “Caddisflies (Trichoptera) of Ireland” but its caddis records do turn up when requesting a general search for the Irish distribution of a species of Trichoptera (Plate 1). This is “A national macroinvertebrate dataset collected for the biomonitoring of Ireland’s river network, 2007–2018 (EPA)” (provided by the Environmental Protection Agency). These data have now been examined by the author and assessed. Altogether 14 species are represented. The data set contains very useful information on the distributions of six species. The record of one species is not accepted. Since the records did not mention the relevant county, that information is now provided. The records were checked using the Irish Grid Reference Finder <<https://irish.gridreferencefinder.com>> and the OSI Discovery maps available on the National Biodiversity Centre’s website. The latter was used as the final arbitrator when EPA site details differed from those on the OSI maps. Four figure grid references have been used here instead of the original six figures as this level of detail is sufficient for the relevant larval records in water bodies.

Another data set “Ireland’s BioBlitz” is only partially represented in “Caddisflies (Trichoptera) of Ireland”. The former has been collated by the National Biodiversity Data Centre from different sources but the main source is now a data set from the Department of the

Environment made available on DATA.GOV.IE (25 January 2023) and covering the period 1 January 2002 to 31 December 2022. Part of the BioBlitz event involves different sites competing against one another to see which site could record the most species over a 24 hour period. BioBlitz is held annually and is intended to raise awareness of biodiversity recording and conservation. Reliable records from that data base separate from “Caddisflies (Trichoptera) of Ireland” have been included in this paper along with some miscellaneous records from other sources.

The records

RHYACOPHILIDAE

***Rhyacophila dorsalis* (Curtis, 1834)**

CARLOW: Aughnabrisky River, near Moyvally (S7850), larva 13 July 2017, EPA. Ballyroughan Little River, bridge near Ballyroughan Little (S7446), larva 11 July 2017, EPA. Barrow River, Graiguenamanagh Bridge (S7043), larva 20 July 2017, EPA. Barrow River, Royal Oak Bridge (S6961), larva 30 August 2017, EPA. Burren River, Burren Bridge, Coolasnaghta (S8156), larva 20 July 2017, EPA. Burren River, Rathoe Bridge (S8071), larva 22 August 2017, EPA. Burren River, Ullard Bridge (S7962), larva 22 August 2017, EPA. Corries River, Kilcloney Bridge (S7352), larva 12 July 2017, EPA. Monefelim River, near Barrow River (S6855), larva 12 July 2017, EPA. Mountain River, Brook Lodge (S7450), larva 13 July 2017, EPA. Mountain River, near Killedmond Bridge (S7952), larva 13 July 2017, EPA. **CLARE:** Ayle River, near Cloghaun River confluence (R5483), larva 1 August 2017, EPA. Bleach River, Corlea Bridge (R6096), larva 9 August 2017, EPA. Corra River, near Corrakyle (R6191), larva 3 August 2017, EPA. Graney River, Aughadarreen Bridge (R5889), larva 3 August 2017, EPA. Lougha River, near Lough Ea (R5289), larva 8 August 2017, EPA.

CORK: Owvane River, Pierson’s Bridge (W0254), larva 25 May 2018, EPA.

DUBLIN: Loughlinstown River, near overpass (O2423), larva 10 June 2015, EPA.

GALWAY: Ballinlough Stream, near Ballin Lough (M6702), larva 10 August 2017, EPA. Coos River, near Boleynabrone (R7094), larva 10 August 2017, EPA. Kilcrow River, Ahanageleery Bridge (M8017), larva 14 August 2017, EPA. Woodford River, near Woodford Bridge (R7499), larva 9 August 2017, EPA.

KILDARE: Athy Stream, near Glenbaun (S7394), larva 24 July 2017, EPA. Graney River, Graney (S8183), larva 24 August 2017, EPA. Greese River, near Ballitore (S7995), larva 19 July 2017, EPA. Tully Stream, Kilberrin Bridge (N7107), larva 28 August 2017, EPA. Tully Stream, near Tully House (N7310), larva 28 August 2017, EPA.

KILKENNY: Duiske River, Aghclare Bridge (S6844), larva 10 July 2017, EPA. Duiske River, Graiguenamanagh (S7043), larva 11 July 2017, EPA. Gowran River, near Goat’s Bridge (S6553), larva 11 July 2017, EPA. Gowran River, near Gowran (S6253), larva 12 July 2017,

EPA. Monefelim River, near Garryduff Crossroads (T2093), larva 12 July 2017, EPA.

LAOIS: Blackwater River, Blackwater Bridge (N4305), larva 21 July 2017, EPA. Douglas River, Gale's Bridge (S6585), larva 23 August 2017, EPA. Douglas River, Shanragh Bridge (S6084), larva 27 July 2017, EPA. Fushoge River, Strand Bridge (S6580), larva 23 August 2017, EPA. Owenass River, Cathole Bridge (N3704), larva 10 September 2014, EPA. Owenass River, near Mountmellick (N4507), larva 21 July 2017, EPA.

MAYO: Clare Island (L6986), 11 June 2016, Siobhan Atkinson (BioBlitz).

MEATH: Tolka River, Dunboyne (O0241), ♂ 17 March 2025, Hugh Feeley.

This is the first time that an Irish adult has been taken in March.

OFFALY: Ballyfinboy River, near Ballintemple House (S0084), larva 3 September 2014, EPA. Ballynagrenia Stream, near Newtown (N2438), larva 19 June 2017, EPA. Brosna River, Ballycumber Bridge (N2130), larva 19 June 2017, EPA. Brosna River, Belmont Bridge (N0722), larva 21 June 2017, EPA. Clodiagh River, Annamoe Bridge (N2924), larva 28 June 2017, EPA. Clodiagh River, near Clonagh (N3020), larva 10 June 2014, EPA. Esker Stream, Esker Bridge (N5527), larva 23 August 2017, EPA. Fuarawn River, near Aghancon (S1398), larva 26 June 2017, EPA. Gageborough River, Ballyboughlin Bridge (N2333), larva 14 June 2017, EPA. Keeloge Stream, Clonlisk Bridge (S0588), larva 26 August 2014, EPA. Little Brosna, Milltown Bridge (S0790), larva 26 August 2014, EPA. Little Brosna River, Sharavoge Bridge (S0596), larva 27 August 2014, EPA. Silver River, Gormagh Bridge (N3328), larva 30 June 2014, EPA. Silver River, near Clodiagh River confluence (N2527), larva 30 June 2014, EPA.

TIPPERARY: Ardcroney Stream, near Ballyfinboy River (R9093), larva 4 September 2014, EPA. Ballyfinboy River, Ballyhooney Bridge (R8696), larva 4 September 2014, EPA. Ballyfinboy River, Modreeny Bridge (R9589), larva 3 September 2014, EPA. Ballyfinboy River, near Lough Derg (R8398), larva 4 September 2014, EPA. Bunow River, Bunow Bridge (S1190), larva 2 September 2014, EPA. Bunow River, Roscrea (S1389), larva 3 September 2014, EPA. Golden Grove Stream, near Bunow Bridge (S1090), larva 27 June 2017, EPA. Pallas River, near Pallas Bridge (M9907), larva 9 September 2014, EPA.

WESTMEATH: Ballynagrenia Stream, bridge near Rosemount (N2342), larva 19 June 2017, EPA. Brosna River, Ballynagore (N3539), larva 13 June 2017, EPA. Brosna River, near Kilbeggan Bridge (N3335), larva 20 June 2017, EPA. Dysart Stream, near Clontinteen (N3349), larva 13 June 2017, EPA. Gageborough River, near Bunanagh (N2943), larva 13 June 2017, EPA. Monaghanstown River, near Monaghanstown (N3445), larva 20 May 2014, EPA. Syonan Castle Stream, near Horseleap (N2738), larva 14 June 2017, EPA.

WICKLOW: Aughrim River, Aughrim (T1279), larva 15 July 2015, EPA. Aughrim River, Wooden Bridge (T1976), larva 14 July 2015, EPA. Avoca River, Avoca Bridge (T2079), larva 29 July 2015, EPA. Ballycreen Brook, Tinnakilly Bridge (T1379), larva 27 June 2018, EPA.

Ballyduff Stream, Ballyduff Bridge (T2273), larva 14 July 2015, EPA. Derry Water, Annacurragh Bridge (T1077), larva 8 July 2015, EPA. Gold Mine River, near Aughrim River confluence (T1976), larva 14 July 2015, EPA. Greese River, near Milltown (N8601), larva 18 July 2017, EPA. Newcastle River, near Newcastle Bridge (O3003), larva 23 June 2015, EPA. Ow River, Roddenagh Bridge (T1179), larva 7 July 2015, EPA. Templerainy Stream, Porter's Bridge (T2574), larva 14 July 2015, EPA. Three Mile Water, near Magherabeg (T3188), larva 30 June 2015, EPA.

Rhyacophila dorsalis has yet to be found in Counties Longford and Roscommon.

***Rhyacophila munda* McLachlan, 1862**

CORK: Owvane River, Pierson's Bridge (W0254), larva 25 May 2018, EPA.

GLOSSOSOMATIDAE

***Agapetus fuscipes* Curtis, 1834**

CLARE: spring near Aillwee (M2404), 15 larvae and 6 adults 18 August 2023, Helen James (Burren BioBlitz).

HYDROPTILIDAE

***Agraylea sexmaculata* Curtis, 1834 New to County Clare**

CLARE: Poulacarran Lake near Fahee North (R3099), larva 20 August 2023, in copious filamentous algae, Helen James (Burren BioBlitz).

PHILOPOTAMIDAE

***Philopotamus montanus* (Donovan, 1813)**

MAYO: Clare Island (L6784) (L6986), 11 June 2016, Siobhan Atkinson (BioBlitz). Glenlaur River, near Sheefry Bridge (L9269), larva 25 October 2017, EPA.

TIPPERARY: Coalbrook Stream, near King's River (S2949), larva 29 July 2013, EPA.

POLYCENTROPODIDAE

***Holocentropus picicornis* (Stephens, 1836)**

DUBLIN: University College Dublin (O1829), 30 September 2016, Hugh Feeley (BioBlitz).

***Neureclipsis bimaculata* (Linnaeus, 1758) New to County Armagh**

ARMAGH: Fane River, Ballynacarry Bridge (H8714), larva 4 September 2012, EPA.

DONEGAL: Lough Key (G8460), larva 28 June 2001, Ruth Little (EPA lakes survey).

MONAGHAN: Fane River, Derrycreevy Bridge below Drumillard Lough (H8220), larva 4 September 2012, EPA.

Neureclipsis bimaculata is now known from 21 of the 32 Irish counties.

***Plectrocnemia conspersa* (Curtis, 1834)**

MAYO: Clare Island (L6784), 11 June 2016, Siobhan Atkinson (BioBlitz).

***Plectrocnemia geniculata* McLachlan, 1871**

GALWAY: Lough Kip River near Moycullen (M2231), larva 21 May 2016, Martin Gammell (BioBlitz).

***Polycentropus flavomaculatus* (Pictet, 1834)**

MEATH: Lough Bane (N5571), larva 24 May 2001, Ruth Little (EPA lakes survey).

ROSCOMMON: Lough Key (G8406), 3 larvae 28 June 2001, Ruth Little (EPA lakes survey).

The original grid reference (G840600) was erroneous.

***Polycentropus kingi* McLachlan, 1881**

GALWAY: Coole Lough, Coole/Garryland Nature Reserve (M4304), 22 May 2010, Frances Lucy, Ger Morgan, Chris Williams and James Moran (BioBlitz).

PSYCHOMYIIDAE

***Psychomyia pusilla* (Fabricius, 1781)**

LIMERICK: Oolagh River, near Feale River confluence (R1128), larva 1 August 2014, EPA.

HYDROPSYCHIDAE

***Cheumatopsyche lepida* (Pictet, 1834) New to County Offaly**

CARLOW: Barrow River, Graiguenamanagh Bridge (S7043), larva 5 July 2016, EPA. Barrow River, near Rathvinden (S6966), larva 27 June 2011 EPA. Barrow River, Royal Oak Bridge (S6961), larva 28 June 2011, EPA.

CORK: Blackwater River, Fermoy Bridge (W8198), larva 16 July 2015, EPA. Blackwater River, Roskeen Bridge (W4498), larva 10 July 2015, EPA.

DONEGAL: Bungosteen River, bridge south west of Tullaghacullion (G7278), larva 6 September 2018, EPA. Drummenny River, Drummenny Bridge (G9678), larva 23 August 2018, EPA. Stracashel River, 500m downstream of the bridge in Glenties (G8193), larva 14 August 2018, EPA.

MAYO: Robe River, north of Curragh (M1664), larva 17 September 2012, EPA.

OFFALY: Brosna River, Bellmount Bridge (N0722), larva 21 June 2017, EPA. Brosna River, Clonony Bridge (N0420), larva 5 June 2014, EPA. Brosna River, 0.5km north west of Pollagh (N1925), larva 20 June 2017, EPA.

WATERFORD: Bride River, near Lisfinny (W9994), larva 7 August 2015, EPA.

WESTMEATH: Brosna River, bridge at Ballynagore (N3539), larva 13 June 2017, EPA.

Cheumatopsyche lepida is now known from 22 of the 32 Irish counties.

***Diplectrona felix* McLachlan, 1878**

WICKLOW: Askanagap Stream, bridge upstream of the Derry River confluence near Ballybeg

(T0576), larva 5 July 2012, EPA. Aughrim River, Wooden Bridge (T1976), larva 9 October 2012, EPA. Avonbeg River, Meetings Bridge (T1883), larva 9 October 2012, EPA.

***Hydropsyche siltalai* Döhler, 1963**

MAYO: Clare Island (L6784), 11 June 2016, Siobhan Atkinson (BioBlitz).

PHRYGANEIDAE

***Phryganea grandis* Linnaeus, 1758**

CORK: Cape Clear Island (V9621), 12 June 2016, Cindy Kingston and Gareth O'Donnell (BioBlitz).

GOERIDAE

***Goera pilosa* (Fabricius, 1775)**

GALWAY: Cregg River, near Drumgriffin (M3537), larva 19 August 2015, EPA. Dalgan River, Doonmacreena Bridge (M4367), larva 8 September 2015, EPA. Nanny River, upstream Weir Bridge, Tuam (M4152), larva 28 July 2015, EPA. Owenglin River, near Barnanoraun (L7451), larva 20 June 2014, EPA. Yellow River, Woodfield Bridge (M5763), larva 8 September 2015, EPA.

MAYO: Aille River, bridge north west of Claureen (M1280), larva 20 July 2015, EPA. Aille River, south of Killawullaun (M1180), larva 20 July 2015, EPA. Belderg River, bridge in Belderg (F9939), larva 17 September 2014, EPA. Bellananaminnaun River, Killerduff Bridge (G0939), larva 17 June 2014, EPA. Bunowen River, Tully Bridge (L8277), larva 30 September 2014, EPA. Carrownisky River, upstream of Roonagh Lough (L7677), 30 September 2014, EPA. Cloondaver Stream, Mullingar Bridge (M2273), larva 21 July 2015, EPA. Clooneen River, near Bartrauve (F7035), larva 18 September 2014, EPA. Glencastle River, upstream of Glencastle Bridge (F7827), larva 18 September 2014, EPA. Glencullin River, near Glencullin (F9025), larva 25 June 2014, EPA. Little River, north of Knockatemple (M2794), larva 12 June 2015, EPA. Owengarve River, Rosgalliv Bridge (L8896), larva 26 September 2014, EPA. Sheskin Stream, upstream Oweniny River (F9723), larva 5 June 2014, EPA. Yellow River, near Faughil (M3786), larva 11 June 2015, EPA.

SLIGO: Culleens River, Culleens Bridge (G3529), larva 24 June 2015, EPA.

***Silo pallipes* (Fabricius, 1781)**

CORK: Bere Island (V7143), 11 June 2016, eroding/upland rivers, Mary Kelly-Quinn (BioBlitz).

MAYO: Clare Island (L6784), 11 June 2016, Siobhan Atkinson (BioBlitz).

LEPIDOSTOMATIDAE

***Crunoecia irrorata* (Curtis, 1834) New to County Offaly**

OFFALY: Gageborough River, Ballyboughlin Bridge upstream of the Brosna River confluence (N2333), larva 14 June 2017, EPA.

Crunoecia irrorata is now known from 29 of the 32 Irish counties.

***Lepidostoma hirtum* (Fabricius, 1775) New to County Laois**

CARLOW: Clashavey River, Clashavey Bridge (S8762), larva 8 August 2016, EPA.

CLARE: Ballymacravan River, Calluragh Bridge (R1389), larva 9 June 2015, EPA.

CORK: Awbeg River, Kilcummer Bridge (R6000), larva 1 July 2015, EPA. Blackwater River, Banteer Bridge (W3999), larva 10 July 2015, EPA. Blackwater River, near Finnow Bridge (W2692), larva 7 July 2015, EPA. Brogeen River, bridge near Castle Park (R3801), larva 3 July 2015, EPA. Brogeen River, near Derrygalun (R3202), larva 3 July 2015, EPA. Funshion River, Bealalaboga Bridge (R7306), larva 27 August 2015, EPA. Funshion River, Glenavuddig Bridge (R7210), larva 27 August 2015, EPA. Glen River, Banteer Bridge (W3998), larva 17 June 2015, EPA. Laney River, Carrigagulla Bridge (W3882), larva 13 June 2017, EPA. Owenanare River, Barleyhill Bridge (R3310), larva 3 July 2015, EPA.

GALWAY: Clarinbridge River, near Ballyboggan (M5430), larva 22 July 2015, EPA. Coole Lough, Coole/Garryland Nature Reserve (M4304), 22 May 2010, Frances Lucy, Ger Morgan, Chris Williams and James Moran (BioBlitz). Skannive Lough (L8032), larva 25 April 2001, Ruth Little (EPA lakes survey).

KERRY: Owencashla River, near Aughacarla (Q6411), larva 24 July 2014, EPA.

KILDARE: Blackwater River, bridge at Johnstown (N7639), larva 18 June 2015, EPA. Blackwater River, near Bishop's Chair (N8136), larva 18 June 2015, EPA.

KILKENNY: King's River, bridge in Callan (S4143), larva 30 July 2013, EPA. King's River, Kells Bridge (S4943), larva 6 July 2016, EPA. King's River, near Callan (S4342), larva 6 July 2016, EPA. Pollanassa River, near Inchacarran (S5524), larva 4 August 2017, EPA.

LAOIS: Barrow River, Ballyclare Bridge (N3814), larva 4 June 2015, EPA. Barrow River, near Reary More (N3612), larva 4 June 2015, EPA.

LIMERICK: Deel River, Rathkeale Bridge (R3641), larva 7 August 2014, EPA.

LONGFORD: Inny River, Shrute Bridge (N1355), larva 25 August 2014, EPA.

LOUTH: Glyde River, Aclint Bridge (N8998), larva 6 September 2012, EPA.

MAYO: Clare Island (L6986), 11 June 2016, Siobhan Atkinson (BioBlitz). Owenmore River, near Ballymonnelly Bridge (F9321), larva 24 June 2014, EPA. Pollagh River, Pollagh Bridge (M3389), larva 25 June 2015, EPA.

ROSCOMMON: Suck River, bridge near Castlecoote (M8062), larva 25 June 2014, EPA.

SLIGO: Drumcliff River, near Drumcliff Bridge (G6742), larva 25 July 2015, EPA.

TIPPERARY: Clashawley River, near Ballybough (S1936), larva 18 July 2017, EPA. Nenagh River, Annaghbeg Bridge (R8384), larva 9 August 2018, EPA. Ollatrim River, near Nenagh River confluence (R8780), larva 9 August 2018, EPA. Ollatrim River, Rathurles Bridge (R9079), larva 18 July 2018, EPA. Suir River, Holycross Bridge (S0954), larva 17 July 2017, EPA. Suir River, Newcastle Bridge (S1313), larva 9 August 2017, EPA.

WATERFORD: Goish River, near Aglish (X1091), larva 6 July 2015, EPA.

WESTMEATH: Glore River, bridge near Ballynameagh (N4474), larva 10 June 2014, EPA. Inny River, bridge near Shrubbywood (N3870), larva 12 June 2014, EPA.

WEXFORD: Corock River, near Coolcliffe (S8616), larva 22 September 2013, EPA. Tinnacross Stream, Carrigeen Bridge (T0447), larva 9 August 2016, EPA.

WICKLOW: Slaney River, Aldborough Bridge (S8885), larva 8 October 2013, EPA.

Lepidostoma hirtum is now known from all 32 Irish counties.

LIMNEPHILIDAE

***Drusus annulatus* (Stephens, 1837) New to Counties Monaghan, Offaly, Roscommon and Westmeath**

CARLOW: Aughnabriskey River, bridge near Moyvalley (S7850), larva 13 July 2017, EPA. Black River, near bridge in Borris (S7351), larva 13 July 2017, EPA. Corries River, Corries Bridge (S7555), larva 13 July 2017, EPA. Oldleighlin Stream, bridge near Oldleighlin (S6665), larva 21 August 2017, EPA.

CLARE: Lougha River, bridge downstream of Lough Ea (R5289), larva 8 August 2017, EPA. Mill Brook, Blacks Bridge (R4085), larva 15 August 2016, EPA.

CORK: Argideen River, Ballaghcummer Bridge (W3645), larva 26 June 2018, EPA. Argideen River, near Inchinattin Cross Roads (W2844), larva 26 August 2015, EPA. Ballymahane River, Ballymahane Bridge (W4958), larva 2 September 2015, EPA. Bandon River, Bealboy Bridge (W2551), larva 25 August 2015, EPA. Bandon River, Murray Bridge (W3854), larva 26 June 2018, EPA. Bealanascartane River, near Bandon River confluence (W2651), larva 26 August 2015, EPA. Bride River, near Kilcor (W8891), larva 2 August 2018, EPA. Brinny River, near Aghnamarroe Cross Roads (W4864), larva 1 September 2015, EPA. Butlerstown River, Trantstown Bridge (W7581), larva 15 July 2014, EPA. Cummer River, near Dunmarklun (W3565), larva 12 June 2017, EPA. Cummer River, near Teereevan (W3667), larva 12 June 2017, EPA. Cusloura River, Moanflugh Bridge (W3280), larva 8 June 2017, EPA. Dirty River, near Tonafora (W2152), larva 25 August 2015, EPA. Dissour River, bridge upstream of Womanagh River confluence (X0274), larva 26 June 2014, EPA. Dissour River, bridge west south west of Ballyre (W9782), larva 26 June 2014, EPA. Dripsey River, Dripsey Bridge (W4679), larva 14 June 2017, EPA. Dripsey River, Luskin's Bridge (W4776), larva 14 June 2017, EPA. Dungourney River, bridge south west of Rathorgan (W9181), larva 3 July 2014,

EPA. Dungourney River, Midleton (W8873), larva 3 July 2014, EPA. Farahy River, bridge at Ballyshonock (R6711), larva 31 July 2018, EPA. Foherish River, Curraleigh Bridge (W2680), larva 7 June 2017, EPA. Foherish River, Foherish Bridge (W2781), larva 8 June 2017, EPA. Funshion River (R7712), larva 1 August 2018, EPA. Glashagloragh River, Inchinattin Bridge (W2944), larva 25 June 2018, EPA. Kilttha River, near Mogeely (W9576), larva 30 June 2014, EPA. Kilttha River, bridge in Castlemartyr (W9673), larva 30 June 2014, EPA. Leamawaddra River, Crooked Bridge (W0234), larva 12 June 2018, EPA. Lee River, Inchinossig Bridge (W1466), larva 12 June 2017, EPA. Ogeen River, Ballintlea Bridge (R6512), larva 25 July 2018, EPA. Owennacurra River, Midleton (W8773), larva 20 June 2017, EPA. Owennacurra River, near Ballyedmond (W8676), larva 2 July 2014, EPA. Owennacurra River, near Ballysallagh (W8181), larva 2 July 2014, EPA. Owennacurra River, near Lisgoold (W8580), larva 20 June 2017, EPA. Ownahinchy River near Bealad (W3142), larva 25 June 2018, EPA. Sall River, Lisnagat Bridge (W4560), larva 2 September 2015, EPA. Sheep River, O'Briens Bridge (R7311), larva 1 August 2018, EPA. Templebodan River, near Templebodan (W8582), larva 2 July 2014, EPA. Toon River, bridge near Coolcaum (W2669), larva 2 September 2014, EPA. Womanagh River, bridge west north west of Donickmore House (W9381), larva 30 June 2014, EPA.

GALWAY: Abbert River, bridge upstream of Abbey (M5143), larva 5 June 2018, EPA. Ahascragh River, Annagh Bridge (M6937), larva 7 September 2017, EPA. Barnacullia Stream, bridge at Barnacullia (M7513), larva 15 August 2017, EPA. Laurencetown Stream, Cody's Bridge (M9122), larva 14 September 2017, EPA.

KERRY: Milltown River, An Droiched Bán (Q4305), larva 29 June 2016, EPA. Owenascaul River, bridge below Anascaul (Q5900), larva 29 June 2016, EPA.

KILDARE: Morell River, bridge north east of Sherlockstown (N9124), larva 27 June 2016, EPA. Morell River, near Tipper (N9118), larva 14 August 2013, EPA. Rathmore Stream, bridge at Rathmore (N9619), larva 15 August 2013, EPA. Rathmore Stream, bridge north east of Johnstown (N9221), larva 28 June 2016, EPA. Rathmore Stream, bridge south west of Arthurstown (N9520) larva 28 June 2016, EPA.

KILKENNY: Gowran River, bridge at Gowran (S6253), larva 12 July 2017, EPA. Monefelim River, Castletwarren Bridge (S6160), larva 21 August 2017, EPA. Monefelim River, bridge near Garryduff (S6457), larva 12 July 2017, EPA.

LAOIS: Barrow River, Borness Bridge (N4609), larva 24 May 2011, EPA. Clodiagh River, bridge east north east of Brockagh (N3314), larva 10 June 2014, EPA. Clodiagh River, upstream of Clonaslee Bridge (N3110), larva 11 June 2014, EPA. Clodiagh River, upstream of Gorrageh River confluence (N3212), larva 11 June 2014, EPA. Douglas River, bridge downstream of Coolanagh (S6883), larva 23 August 2017, EPA. Dunrally Stream, bridge west north west of Garrymaddock (N5602), larva 19 August 2009, EPA. Fushoge River, Strand

Bridge (S6580), larva 23 August 2017, EPA. Fushoge River, Rossmore Bridge (S6975), larva 31 July 2018, EPA. Gorragh River, Gorragh Bridge (N3210), larva 11 June 2014, EPA.

LIMERICK: Broadford Stream, Lisnafulla Bridge (R3123), larva 13 August 2014, EPA. Groody River, Killonan Bridge (R6354), larva 10 August 2012, EPA.

MAYO: Aille River, bridge south of Killawullaun (M1180), larva 19 June 2018, EPA. Ballindine River, bridge upstream of the Robe River confluence (M3570), larva 12 June 2018, EPA.

MEATH: Devlin River, bridge south of Grangegeeth (N9578), larva 13 June 2012, EPA. Mattock River, Phoenixtown Bridge (N9680), larva 11 June 2012, EPA. Nanny River, bridge north east of Bellewstown House (O0769), larva 15 August 2018, EPA.

MONAGHAN: stream near Lurganmore, bridge 1.5km downstream of Muckno Mill Lough (H8321), larva 4 September 2012, EPA.

OFFALY: Breaghmore River, Roscomore Bridge (S1697), larva 6 July 2017, EPA. Gageborough River, Gageborough Bridge (N2637), larva 14 June 2017, EPA. Tullamore River, near Lugmore (N4422), larva 27 June 2017, EPA.

ROSCOMMON: Clooneigh River, bridge south west of Kilroosky (M9169), larva 21 September 2017, EPA. Shad Lough Stream, bridge north north east of Ballyglas (M8776), larva 22 September 2017, EPA.

TIPPERARY: Ballyfinboy River, Ballyhooney Bridge (R8696), larva 18 July 2017, EPA. Bunow River, Bunow Bridge (S1190), larva 2 September 2014, EPA. Finisk River, Priesttown Bridge (S1707), larva 21 August 2018, EPA. Golden Grove Stream near Little Brosna River (S1090), larva 27 June 2017, EPA. Kilfadda Castle Stream, bridge south east of Carrigahorig (M9100), larva 19 July 2017, EPA. Newtown River, Newtown Bridge (R8080), larva 17 July 2012, EPA.

WATERFORD: Brickey River, Knockmahon Bridge (X1893), larva 23 June 2016, EPA. Clodiagh River, bridge north east of Ballycullane (S3216), larva 21 June 2018, EPA. Dunhill River, Ballyphilip Bridge (S5002), larva 20 June 2016, EPA. Farnane River, downstream of Derry Bridge, Millstreet (S1701), larva 21 August 2018, EPA. Licky River, Licky Bridge (X1382), larva 22 August 2018, EPA. Mahon River, east north east of Seafeld House (S4201), larva 21 June 2016, EPA.

WESTMEATH: Dysart Stream, near Clontinteen (N3349), larva 13 June 2017, EPA. Monaghanstown River, near Glomerstown (N3445), larva 20 May 2014, EPA. Lough Lene-Adeel Stream, bridge upstream of Lough Adeel (N5468), larva 5 September 2012, EPA.

WICKLOW: Derreen River, bridge south west of Toorboy (S9987), larva 2 August 2018, EPA. Derry Water, bridge north west of Moyne (T0380), larva 4 July 2012, EPA. Newcastle River, 0.5km downstream of Newcastle Bridge (O3003), larva 30 May 2012, EPA. Templerainy Stream, Porter's Bridge (T2574), larva 24 May 2012, EPA. Three Mile Water, bridge near

Magherabeg (T3188), larva 3 July 2012, EPA.

Drusus annulatus is now known from 29 of the 32 Irish counties,

***Anabolia nervosa* (Curtis, 1834)**

CAVAN: Cullies River (H2707), larva 12 July 2017, EPA.

CLARE: Broadford River, bridge upstream of Doon Lough (R5573), larva 25 August 2011, EPA. Lough Bunny (R3695), larva 25 May 2013, Pascal Sweeney (BioBlitz). Mill Brook near Cappamore (R4287), larva 14 September 2010, EPA.

DONEGAL: Abberachrin River, Kilclooney Bridge (G7195), larva 13 August 2015, EPA. Duntally River, bridge east of Creeslough (C0630), larva 12 September 2015, EPA. Lough Nastackan stream, bridge upstream of the sea (Tramore Bay) (C5947), larva 20 September 2016, EPA.

DUBLIN: Newbridge Demesne (O2149), 22 May 2010, Colm Ronayne (BioBlitz).

GALWAY: Ballin Lough stream, bridge east of Ballynagar House (M7304), larva 22 July 2014, EPA. Ballin Lough stream, second bridge upstream of Ballin Lough (M6702), larva 22 July 2014, EPA. Cappagh River, Metal Bridge (M6811), larva 21 July 2014, EPA. Drumkeary stream, second bridge upstream of the Duniry River (M6907), larva 22 July 2014, EPA. Owendalulleegh River, bridge south east of Killaheen (R4897), larva 20 October 2009, EPA. Polleen River, bridge south of Kilroe East (M0922), larva 15 December 2009, EPA. Springfield River, bridge east of Curraghmulmurry (M6865), larva 5 August 2008, EPA. Suck River, 3km downstream of Ballinasloe (Pollboy) (M8729), larva 29 July 2008, EPA. Tooreenacoona River, bridge upstream of Lough Inagh (L8255), larva 4 October 2012, EPA.

KERRY: Feohanagh River, bridge at Feohanagh (Q3909), larva 6 October 2011, EPA.

LEITRIM: Laheen stream, bridge southwest of Drummercross (H2407), larva 12 July 2017, EPA.

LIMERICK: Ahacronane River, bridge south of Spa Wells near Creeves (R3044), larva 28 July 2011, EPA. Dooncaha Stream, bridge west of Tiermore House (R2645), larva 28 July 2011, EPA.

MAYO: Belladooan River (G1128), larva 10 August 2010, EPA. Bellanamean River (G3609), larva 13 July 2016, EPA. Cloonaghmore River, Tonrehown Bridge (G1528), larva 22 August 2016, EPA. Cloondaver north stream, bridge north east of Cloondaver (M2072), larva 7 December 2012, EPA. Deel River, Deel Bridge (G0015), larva 2 August 2016, EPA. Glenree River (G3619), larva 9 September 2016, EPA. Moy River, 100m upstream of the bridge on the Awinford Road (G3401), larva 18 July 2016, EPA. Moy River, Ballylahan Bridge (M2799), larva 31 July 2013, EPA. Moy River, ford near Bellanacurra (G4004), larva 28 July 2016, EPA. Oughtagh River, bridge upstream of the Moy River confluence (M2799), larva 15 July 2010, EPA. Owenmore River, bridge upstream of the Cloonaghmore River (G1426), larva 5 August 2016, EPA. Sonnagh River, Gorteen Bridge (G4104), larva 23 July 2010, EPA. Spaddagh

River, bridge upstream of the Moy River confluence (M3299), larva 4 August 2010, EPA. Yellow River, ford west of Corlee (G3208), larva 11 July 2013, EPA.

ROSCOMMON: Breedoge River, bridge just south of Breedoge (M7494), larva 8 July 2014, EPA. Feorish River, Leiterra Bridge (G8910), larva 31 July 2008, EPA. Francis River, Castlerea (M6779), larva 29 June 2017, EPA. Suck River, north of Gorteenclough (M8158), larva 24 July 2008, EPA.

SLIGO: Bellanamean River (G4009), larva 26 June 2015, EPA. Culleens River, Culleens Bridge (G3529), larva 27 July 2010, EPA. Eignagh River, Cloongoonagh Bridge (G4308), larva 9 August 2013, EPA. Gorteen stream, bridge north-east of Gurteen (G6605), larva 4 April 2013, EPA. Moy River, bridge south east of Cloonacool (G4916), larva 12 July 2007, EPA. Moy River, Cloonbaniff Bridge (G5219), larva 11 July 2007, EPA. Mullaghanoe River, bridge at Cloonlaughil (G4603), larva 22 July 2010, EPA. Owengarve River, Dawros Bridge (G4507), larva 18 July 2007, EPA.

***Limnephilus lunatus* Curtis, 1834**

CORK: Bere Island, depositing/lowland rivers (V7343), 11 June 2016, Mary Kelly-Quinn (BioBlitz).

DUBLIN: University College Dublin (O1830), 30 September 2016, Hugh Feeley (BioBlitz).

***Limnephilus nigriceps* (Zetterstedt, 1840)**

CLARE: Ballard Cottage near Dabrian (R3292), 3 adults 18 August 2023, Helen James (Burren BioBlitz).

***Potamophylax latipennis* (Curtis, 1834)**

DUBLIN: Liffey Valley Park, Waterstown (O0835), 21 May 2011, Pascal Sweeney, Mary Kelly Quinn and Julian Reynolds (BioBlitz).

***Stenophylax permistus* McLachlan, 1895**

GALWAY: Cloonmore (M2241), ♀ 21 May 2016, Martin Gammell (BioBlitz).

BERAEIDAE

***Beraea maurus* (Curtis, 1834)**

CLARE: river at Rockvale Bridge near Boston (R3898), adult 19 August 2023, Helen James (Burren BioBlitz).

ODONTOCERIDAE

***Odontocerum albicorne* (Scopoli, 1763) New to Counties Laois, Limerick, Louth, Monaghan, Offaly, Roscommon and Westmeath**

CARLOW: Aughnabrisky River, near Mountain River confluence (S7850), larva 8 September 2011, EPA. Ballaghmore tributary, Sandbrooke Bridge (S8467), larva 23 May 2007, EPA. Barrow River, Royal Oak Bridge (S6961), larva 30 August 2017, EPA. Burren River, Burren

Bridge (S8156), larva 13 October 2014, EPA. Burren River, Milltown Bridge (S7858), larva 31 August 2011, EPA. Clashavey River, Clashavey Bridge (S8762), larva 8 August 2016, EPA. Clody River, near Bunclody (S8954), larva 24 August 2010, EPA. Corries River, near Corries Bridge (S7555), larva 13 July 2017, EPA. Derreen River, Hacketstown Bridge (S9680), larva 17 May 2007, EPA. Douglas River, Lucas Bridge (S9281), larva 1 August 2013, EPA. Kildavin Stream, near Kildavin (S8859), larva 17 July 2013, EPA. Killedmond River, near Killedmond (S7952), larva 8 September 2011, EPA.

CAVAN: Drumsallagh River, County Bridge (N7997), larva 2 September 2012, EPA. Erne River, Carrigan (N3993), larva 20 July 2017, EPA. Roo River, near Barran (H0335), larva 3 October 2007, EPA.

CLARE: Blackwater River, near New Bridge (R6161), larva 21 October 2009, EPA. Broadford River, near Graffa Bridge (R5971), larva 22 August 2007, EPA. Clareen River, near Killerk (R2970), larva 30 August 2016, EPA. Cloghaun River, Annaghneal Bridge (R5582), larva 7 September 2017, EPA. Cloghaun River, near Gortacummer (R5283), larva 16 October 2009, EPA. Cratloe River, near Shannon River (R5159), larva 25 July 2011, EPA. Doonbeg River, near Mountrivers (Q9764), larva 25 July 2018, EPA. Glenomra Wood Stream near Blackwater confluence (R6065), larva 18 September 2014, EPA. Inch River, Inch Bridge (R3075), larva 21 August 2007, EPA. Lougha River, near Lough Ea (R5289), larva 31 August 2012, EPA. Owenogarney River, near Ballymacdonnell Bridge (R5977), larva 22 August 2007, EPA. Rine River, Blackweir Bridge (R3871), larva 3 September 2013, EPA. Rine River, bridge near Moymore (R4578), larva 2 September 2013, EPA.

CORK: Bregoge River, Streamhill Bridge (R6011), larva 1 July 2015, EPA. Flesk River, Ballyglissane Bridge (W8089), larva 28 July 2015, EPA. Glashanabrack River, Trout Brook Bridge (W7187), larva 28 July 2015, EPA. Knoppoge River, near Bluebell Bridge (W8289), larva 28 July 2015, EPA. Nad River, near Glen River confluence (W4291), larva 20 June 2015, EPA. Nad River, near Nadanuller Beg (W4189), larva 20 June 2015, EPA. Ogeen River, Ballintlea Bridge (R6512), larva 1 July 2015, EPA. Owenanare River, Barleyhill Bridge (R3310), larva 3 July 2015, EPA. Owenanare River, near Dalua River confluence (R3604), larva 3 July 2015, EPA. Owenbaun River, near Owenbaun Bridge (W3088), larva 13 July 2015, EPA.

DONEGAL: Ballintra River, near Lough Garlagh More (G9869), larva 20 August 2018, EPA. Big Burn, Cranford Bridge (C1931), larva 25 September 2012, EPA. Bracky River, Bracky Bridge (G7289), larva 15 August 2018, EPA. Bridgetown River, near Bridgetown (G9271), larva 19 August 2008, EPA. Burnside, near Carrowkeel (C2132), larva 14 July 2009, EPA. Calabber River, Meenamolt Bridge (B9923), larva 9 September 2015, EPA. Camowen River, Srath Bridge (C4533), larva 14 September 2016, EPA. Corabber River, upstream Lough Eske (G9786), larva 20 August 2008, EPA. Corveen River, bridge near Stramartin (B8227), larva 12

September 2018, EPA. Corveen River, Owencronahulla River confluence (B8227), larva 12 September 2018, EPA. Crana River, Druminderry Bridge (C3834), larva 18 September 2007, EPA. Crow River, south of Crove (G6684), larva 21 August 2008, EPA. Cummirk River, Cummirk Bridge (B9806), larva 24 August 2016, EPA. Deelee River, bridge near Drumkeen (C1601), larva 2 August 2007, EPA. Derryart River, Swilly Bridge (C0433), larva 9 July 2009, EPA. Dooballagh Burn, bridge at Pluck Mill (C2210), larva 8 August 2007, EPA. Drumhallagh River, Drumhallagh Bridge (C2932), larva 10 August 2007, EPA. Duntally River, Duntally Bridge (C0630), larva 26 September 2012, EPA. Eglish River, bridge at Meenataggart (G9286), larva 14 August 2015, EPA. Eske River, Donegal Town (G9378), larva 26 August 2008, EPA. Eske River, Thrushbank Bridge (G9580), larva 8 September 2015, EPA. Glashagh River, Glashagh Bridge (G4134), larva 14 September 2016, EPA. Glen River, bridge near Glasserchoo (B8632), larva 26 July 2012, EPA. Glen River, upstream Owenteskinny River (G6185), larva 21 August 2008, EPA. Oily River, bridge at Milltown (G7477), larva 19 August 2015, EPA. Owenator River, north of Lough Agher (B8415), larva 16 July 2009, EPA. Owenea River, near Mullanmore (G8493), larva 22 July 2009, EPA. Owencarrow River, Owencarrow Bridge (C0625), larva 31 July 2018, EPA. Owencronahulla River, Stramartin Bridge (B8127), larva 12 September 2018, EPA. Owenea River, near Mullantboyle (G8093), larva 14 August 2018, EPA. Owenteskinny River, south of Durlough (G6686), larva 21 August 2008, EPA. Owenteskinny River, near confluence with Glen River (G6185), larva 21 August 2008, EPA. Owenwee River, near Maghera (G6690), larva 21 July 2009, EPA. Owenwee River, upstream of Carrick (G5680), larva 26 August 2015, EPA. Roechrow River, near Meentully (G7383), larva 20 August 2015, EPA. Shallogan River, upstream Stracashel River (G8396), larva 15 August 2012, EPA. Stracashel River, near Meenamalragh (G8595), larva 15 August 2012, EPA. Swilly River, bridge at Newmills (C1209), larva 26 July 2010, EPA. Tullaghobegly River, Bellina Bridge (B9232), larva 13 September 2007, EPA.

GALWAY: Dawros River, Dawros Bridge (L7059), larva 5 October 2017, EPA. Dooghta River, bridge near Lough Corrib (M0352), larva 10 August 2018, EPA. Drimneen River, Natural Bridge (M1440), larva 19 October 2009, EPA. Traheen River, Traheen Bridge (L6856), larva 30 August 2012, EPA.

KERRY: Cloghane River, near Lough Gal (Q4806), larva 7 October 2011, EPA. Feohanagh River, near Feohanagh (Q3909), larva 23 July 2014, EPA. Lee River, Tralee (Q8413), larva 9 September 2011, EPA. Owencashla River, near the sea (Q6411), larva 5 October 2011, EPA. Teermoyle Stream, near Toon (V5682), larva 22 August 2012, EPA.

KILDARE: Lerr River, Castledermot (S7885), larva 24 August 2017, EPA.

KILKENNY: Barrow River, Ballyteigelea Bridge (S7150), larva 20 July 2017, EPA. Duiske River, Aghclare Bridge (S6844), larva 4 July 2011, EPA. Gowran River, near Freneystown (S5960), larva 21 August 2017, EPA. King's River, Kells Bridge (S4943), larva 6 July 2016,

EPA. Monefelim River, Castlewarren Bridge (S6160), larva 21 August 2017, EPA. Muckalee River, near Cloghpook (S5465), larva 1 August 2018, EPA.

LAOIS: Ballynacarrig River, near Coolagh (N2713), larva 10 August 2011, EPA. Barrow River, near Rearyvalley (N3612), larva 27 August 2009, EPA. Barrow River, Portarlinton (N5412), larva 25 July 2017, EPA. Clodiagh River, near Brockagh (N3314), larva 28 June 2017, EPA. Gorrageh River, Gorrageh Bridge (N3210), larva 29 June 2017, EPA. Owenass River, Mountmellick (N4507), larva 21 July 2017, EPA. Owenass River, near Barkmill (N4105), larva 26 June 2018, EPA. Tonet River, near Keeloge (S2394), larva 25 June 2018, EPA.

LEITRIM: Bonet River, bridge near Milltown (G8738), larva 3 October 2018, EPA. Bonet River, near Dromahaire Bridge (G7931), larva 23 July 2015, EPA. Cullies River, near Gulladoo Lough (N2499), larva 12 July 2017, EPA. Drowes River, Lennox's Bridge (G8157), larva 12 August 2009, EPA. Scardan River, Bellanaginnny Bridge (G9239), larva 11 August 2009, EPA.

LIMERICK: Bilboa River, bridge near Cappamore (R7850), larva 10 August 2012, EPA. Cahernahallia River, near Dead River confluence (R8248), larva 24 September 2008, EPA. Crompaun River, Meelick Bridge (R5459), larva 23 August 2007, EPA. Flemingstown Stream, Gotoon Bridge (R6424), larva 9 September 2017, EPA. Killeengarriff River, near Annagh Bridge (R6856), larva 22 October 2008, EPA.

LOUTH: Fane River, Stephenstown Bridge (J0101), larva 4 June 2015, EPA. Glyde River, Castlebellingham Bridge (O0695), larva 25 September 2009, EPA. Glyde River, Mapastown Bridge (N9895), larva 5 October 2009, EPA.

MAYO: Ballinglen River, New Bridge (G1038), larva 12 September 2008, EPA. Belladoodan River, bridge near Belladoodan (G1128), larva 17 September 2013, EPA. Brusna River, near Quignashee (G2819), larva 5 August 2010, EPA. Callow Loughs Stream, near Greggagh (G2905), larva 13 August 2007, EPA. Carrowbeg River, Cloghan Bridge (M0179), larva 15 October 2009, EPA. Carroward River near Moy River confluence (M2898), larva 9 June 2015, EPA. Cloonaghmore River, near Tonroe (G1630), larva 16 August 2007, EPA. Cloonaghmore River, Tonrehown Bridge (G1528), larva 9 September 2013, EPA. Clydagh River, near Derrynamuck (M1795), larva 14 July 2016, EPA. Crumpaun River, near Lough Beltra (G0901), larva 17 August 2009, EPA. Deel River, near Keenagh (G0210), larva 17 August 2007, EPA. Duvowen River, near Ballynagar (G1026), larva 11 August 2010, EPA. Duvowen River, upstream Cloonaghmore River (G1426), larva 16 August 2007, EPA. Glenamoy River, Glenamoy Bridge (F8933), larva 1 October 2008, EPA. Glenamoy River, near Glencalry (F9634), larva 1 October 2008, EPA. Glencullin River, near Glencullin Upper (F9025), larva 22 July 2008, EPA. Glencullin River, upstream Carrowmore Lake (F8627), larva 22 July 2008, EPA. Glenree River, Corimla South (G2919), larva 25 July 2007, EPA. Glore River, Glore Bridge (M3591), larva 5 October 2010, EPA. Gweestion River, Scarrownageeragh Bridge (M3097), larva 23 September 2016, EPA. Moy River, near Bellanacurra (G4004), larva 29

August 2007, EPA. Muingnakee River, 1km upstream Glencullin River confluence (F8626), larva 5 July 2011, EPA. Mullaghanoe River, near Moy River (G4104), larva 18 September 2013, EPA. Owenduff River, near Lurgandarragh (F8607), larva 7 July 2011, EPA. Owenduff River, near Srahnamanragh Bridge (F8014), larva 15 July 2011, EPA. Oweniny River, near Ballymonnelly Bridge (F9321), larva 20 June 2017, EPA. Oweniny River, near Bellacorick (F9719), larva 22 September 2008, EPA. Oweniny River, near Bellacorick Bridge (F9620), larva 20 June 2017, EPA. Oweniny River, near Largan (F9022), larva 7 July 2011, EPA. Oweniny River, near Srahnakilly (F9722), larva 6 July 2011, EPA. Owenmore River, Ballintober Bridge (G1426), larva 16 August 2007, EPA. Owenmore River, near Belville (G1224), larva 11 August 2010, EPA. Owenmore River, south of Tawnywaddyduff (G0724), larva 16 August 2007, EPA. Rathroe River, near Seeaghanbaun (G1427), larva 17 September 2013, EPA. Sheskin Stream, upstream Oweniny River (F9723), larva 21 July 2008, EPA. Sonnagh River, near Cartron (G4400), larva 18 September 2013, EPA. Spaddagh River, near Castlesheenaghan (M3996), larva 4 August 2010, EPA. Strade River, near Moy River confluence (M2698), larva 11 June 2015, EPA. Tobergal River, near Bunduvowen (G2101), larva 2 August 2013, EPA. Yellow River, near Faughil (M3786), larva 11 June 2015, EPA. Yellow River, near Rinnananny (G2806), larva 24 September 2016, EPA.

MONAGHAN: Blackwater River, near Milltown (H6634), larva 19 June 2013, EPA. Conawary River, near Blackwater River confluence (H6534), larva 1 July 2013, EPA. Conawary River, White Bridge (H6332), larva 1 July 2013, EPA. Fane River, Inniskeen (H9307), larva 25 September 2009, EPA. Glyde River, Cormey Bridge (N8097), larva 2 September 2012, EPA. Knappagh River, near Bellatrain Lough (H7410), larva 22 July 2013, EPA. Rossdreenagh Stream, near Corcrin (H8604), larva 4 June 2015, EPA.

OFFALY: Breaghmore River, Breaghmore Bridge (N1403), larva 16 August 2011, EPA. Breaghmore River, near Lofus Bridge (N1402), larva 16 August 2011, EPA. Camcor River, Birr (N0604), larva 27 August 2008, EPA. Camcor River, Drumcullen Bridge (N1706), larva 27 August 2008, EPA. Camcor River, near Killyon (N1305), larva 16 August 2011, EPA. Clareen River, near Aghancon (S1398), larva 14 August 2014, EPA. Clodiagh River, near Clonagh (N3020), larva 27 June 2017, EPA. Glenfelly Stream, near Clonfosse Bridge (N1706), larva 27 August 2008, EPA. Glenfelly Stream, Glenafely Bridge (N2001), larva 25 August 2008, EPA. Roscomore Stream, Aghagurty Bridge (N1700), larva 26 August 2008, EPA. Silver River, Ballynacarrig Bridge (N2213), larva 27 August 2008, EPA.

ROSCOMMON: Breedoge River, near Breedoge (M7494), larva 30 August 2011, EPA.

SLIGO: Bellanamean River, Lisheen Bridge (G4009), larva 13 July 2016, EPA. Charlestown Stream, bridge near Bellahy (G4702), larva 28 August 2013, EPA. Clooneen River, near Killavil (G6310), larva 18 August 2009, EPA. Drumcliff River, near Collinsford (G7142), larva 9 September 2009, EPA. Drumcliff River, near Drumcliff Bridge (G6742), larva 9 September

2009, EPA. Dunmorán River, near Longford Demense (G5530), larva 3 September 2009, EPA. Dunneill River, bridge near Water Treatment Works (G4429), larva 9 August 2012, EPA. Easky River, Easky Bridge (G3737), larva 1 September 2009, EPA. Easky River, near Camcuill (G3933), larva 1 September 2009, EPA. Eignagh River, near Cloongoonagh (G4308), larva 13 July 2016, EPA. Glenaniff River, near Lough Melvin (G9249), larva 8 September 2009, EPA. Grange River, near Cloontyprocklis (G6549), larva 25 July 2015, EPA. Grange River, near Gortnaleck (G6947), larva 9 September 2009, EPA. Killoran Lough Stream, bridge near Owenmore River (G6322), larva 2 August 2018, EPA. Leaffony River, near Cabraghkeel (G3135), larva 19 July 2007, EPA. Lenyvee River, near Ounagh (G4117), larva 6 August 2013, EPA. Lough Talt River, bridge in Aclare (G4110), larva 13 July 2016, EPA. Loughanaboll River, near Masshill (G4317), larva 19 July 2010, EPA. Mad River, near Cloonacool (G4917), larva 19 July 2010, EPA. Owenbeg River, bridge near Kilnarnamagh (G6525), larva 3 August 2018, EPA. Owenmore River, near Collooney (G6725), larva 12 August 2015, EPA. Owenboy River, near Carrownabanny (G5424), larva 8 August 2012, EPA. Owengarve River, Dawros Bridge (G4507), larva 18 July 2007, EPA. Owenykeevan River, near Rathmacurkey (G3730), larva 1 September, 2009, EPA. Unshin River, Ballygrania Bridge (G6925), larva 10 August 2012, EPA. Unshin River, Lisconny Bridge (G6922), larva 23 July 2015, EPA. Willsborough Stream, near Glackbaun (G7439), larva 12 August 2009, EPA. Willsborough Stream, near Willowbrook (G7138), larva 12 August 2009, EPA. Willsborough Stream, Sligo Town (G6937), larva 11 August 2012, EPA.

TIPPERARY: Aughnaglanny River, Victoria Bridge (R9948), larva 6 August 2014, EPA. Bilboa River, near Knocknakill (R9060), larva 7 August 2012, EPA. Clashawley River, Loughcapple Bridge (S2330), larva 27 July 2017, EPA. Clashawley River, near Fethard (S2233), larva 27 July 2017, EPA. Clodiagh River, near Castlehill (R9865), larva 13 July 2017, EPA. Glenboy River, Glenboy Bridge (S1113), larva 9 August 2017, EPA. Gortnagowna River, near Cloghinch (R9568), larva 11 July 2012, EPA. Inch River, near Loughbrack (R9158), larva 7 August 2012, EPA. Killenaule Stream, near St Johnston Castle (S2341), larva 14 August 2014, EPA. Lingaun River, near Whitehall Bridge (S3432), larva 15 August 2014, EPA. Multeen River, near Annacarty (R9145), larva 6 August 2014, EPA. Nenagh River, Cloghinch Bridge (R9669), larva 11 July 2012, EPA. Newtown River, Newtown Bridge (R8080), larva 17 July 2012, EPA. Toem Stream, Toem (R8647), larva 8 August 2012, EPA. Youghal River, near Curragh (R7680), larva 17 July 2012, EPA. Youghal River, Youghal (R7981), larva 17 July 2012, EPA.

WATERFORD: Glasha River, near Suir River confluence (S3022), larva 10 August 2017, EPA. Glenakeefe River, near Owennashad River confluence (S0501), larva 16 August 2015, EPA. Halfway House Stream, near Halfway House (S6609), larva 29 August 2017, EPA. Owennashad River, near Glendeish (S0404), larva 16 August 2015, EPA.

WESTMEATH: Inny River, Camagh Bridge (N3975), larva 24 August 2011, EPA.

WEXFORD: Blackwater Stream, Blackwater Bridge (T1164), larva 25 August 2016, EPA. Boro River, Boro Bridge (S8637), larva 11 July 2016, EPA. Corbally Stream, Ballincash Bridge (T0542), larva 11 June 2007, EPA. Corbally Stream, Cooladine Bridge (T0139), larva 27 August 2010, EPA. Gorteen Upper Stream, near Coolnacloose (T1766), larva 19 June 2007, EPA. Tinnacross Stream, Carrigeen Bridge (T0447), larva 11 June 2007, EPA. Tinnacross Stream, near Salsborough Bridge (T0043), larva 9 August 2016, EPA.

WICKLOW: Avonbeg River, Meetings Bridge (T1883), larva 24 June 2009, EPA. Avonmore River, Rathdrum Bridge (T1988), larva 30 July 2015, EPA. Ballycreen Brook, near Macreddin (T1282), larva 4 July 2012, EPA. Ballyduff Stream, Ballyduff Bridge (T2273), larva 12 July 2018, EPA. Derreen River, near Ballykilmurray (S9983), larva 17 May 2007, EPA. Lemonstown Stream, near Athgreany (N9303), larva 16 August 2013, EPA. Newcastle River, near Newcastle (O3003), larva 30 May 2012, EPA. Templerainy Stream, Porter's Bridge (T2574), larva 24 May 2012, EPA.

Odontocerum albicorne is now known from 29 of the 32 Irish counties. The species has yet to be found in Counties Armagh, Down and Longford.

MOLANNIDAE

[*Molanna albicans* (Zetterstedt, 1840)]

DONEGAL: Glashagh (Lower), bridge east of Killydesert (C1516), larva 2 September 2016, EPA.

From an examination of the Google Earth satellite photograph of this site, it is evident that this small stream is not a suitable habitat for larvae of *Molanna albicans* and the record is therefore considered to be a misidentification.]

LEPTOCERIDAE

Athripsodes aterrimus (Stephens, 1836)

GALWAY: Lough Rea (M6215), larva 2 September 2002, Gary Free (EPA lakes survey).

Oecetis furva (Rambur, 1842)

CLARE: Ballard Bridge near Dabrian (R3292), larva 20 August 2023, Helen James (Burren BioBlitz).

Acknowledgements

The author is very grateful to Hugh Feeley for his record of *Rhyacophila dorsalis*, to Helen James for five records from the Burren BioBlitz in 2023 and to the staff of the Environmental Protection Agency for their records.

Reference

O'Connor, J. P. (2024) Caddisflies (Trichoptera) of Ireland, National Biodiversity Data Centre, Ireland. <https://maps.biodiversityireland.ie/Dataset/250> (updated with Addendum 10, 16 September 2024).

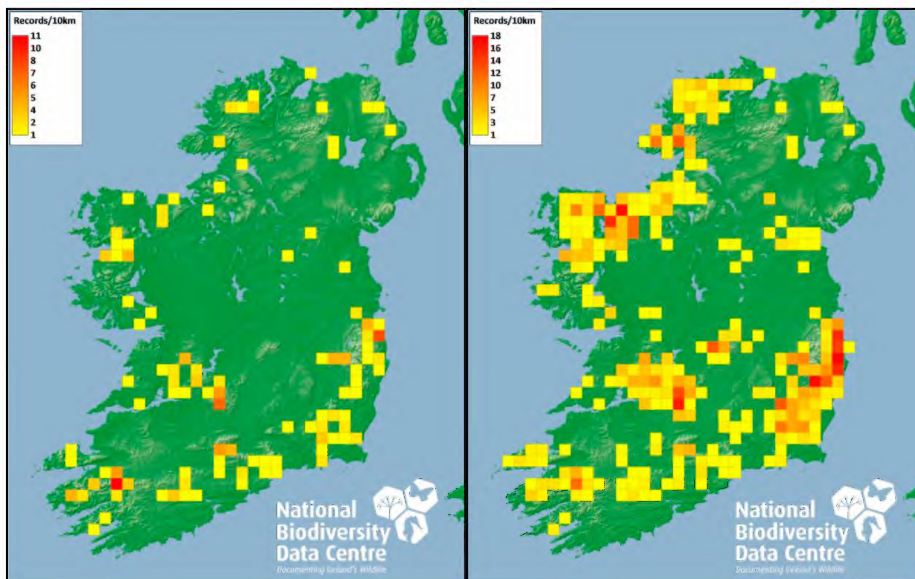


PLATE 1. Distribution maps of *Odontocerum albicorne* from the National Biodiversity Data Centre, accessed 2 April 2025. Left = Citation: James P. O'Connor, Caddisflies (Trichoptera) of Ireland, National Biodiversity Data Centre, Ireland, *Odontocerum albicorne*, image, accessed 02 April 2025; Right = Citation: National Biodiversity Data Centre, Ireland, *Odontocerum albicorne*, image, accessed 02 April 2025.

RECORDS OF STONEFLIES (PLECOPTERA) FROM IRELAND IN 2024

Hugh B Feeley¹, Helen M. Barber-James², Bryan Kennedy³, David McGrath⁴, Ryan Mitchell⁵, Stewart Rosell⁶, Amy Weir^{2,7} and Jan-Robert Baars⁸

¹*Environmental Protection Agency, McCumiskey House, Richview, Clonskeagh Road, Dublin 14, D14 YR62, Ireland.*

e-mail: <h.feeley@epa.ie>

²*Ulster Museum, National Museums of Northern Ireland, Belfast, Northern Ireland.*

³*Environmental Protection Agency, John Moore Road, Castlebar, County Mayo, F23 KT91, Ireland.*

⁴*Ballard, Kilnaboy, Corofin, County Clare, Ireland.*

⁵*Johnstown Court, Sligo, County Sligo, Ireland.*

⁶*Agri Food and Biosciences Institute, 18a Newforge Lane, Belfast, BT9 5PX, Northern Ireland.*

⁷*School of Biological Sciences, Queens University, Belfast, Northern Ireland.*

⁸*Invasive Ecology (InEco) Laboratory, School of Biology and Environmental Science, University College Dublin, Belfield, Dublin 4, Ireland.*

Abstract

Over 430 stonefly records from lake shores, streams and rivers across the island of Ireland are listed. This includes records from 31 counties collected primarily in 2024, although eight additional records from 2023 are included. All 19 extant species are represented, with new location records highlighted for seven species. Records for Rathlin Island, Co. Antrim are published for the first time. The reinstatement of *Isoperla subarmata* Despax, 1936 for Irish specimens of *Isoperla* is also noted, with the removal of *Isoperla grammatica* (Poda, 1761) from the Irish species list.

Key words: *Capnia atra*, *Isoperla subarmata*, *Perla carlukiana*, *Protonemura praecox*, Northern Ireland, Rathlin Island.

Introduction

This paper lists 425 adult and larval stonefly records from lake shores, streams and rivers across the island of Ireland collected in 2024 and eight adult records from 2023. In 2024 records range over ten months from 4 January to 17 October and includes records from 31 counties across the island. Westmeath was the only county not surveyed by the authors in 2024. Records for all 19 extant species are included as well as new county records for *Chloroperla tripunctata* (Scopoli, 1763), *Leuctra hippopus* Kempny, 1899, *L. nigra* (Olivier, 1811), *Nemoura avicularis* Morton, 1894, *N. cinerea* (Retzius, 1783), *Nemurella pictetii* Klapálek, 1900 and *Protonemura praecox* (Morton, 1894). Similarly, the first records for Rathlin Island, Co. Antrim are listed.

Coastal island records are rare for Irish stoneflies but do exist for Clare Island and Achill Island, Co. Mayo, Valentia Island, Co. Kerry, and Bere Island, Co. Cork (Feeley, Baars and Kelly-Quinn, 2016).

This paper also lists *Isoperla subarmata* Despax, 1936 as part of the Irish plecopteran fauna for the first time. This species was reinstated by Reding (2024) after Illies (1952) incorrectly synonymised it with *Isoperla grammatica* (Poda, 1761). Irish adult male and female *Isoperla* specimens, from counties Dublin, Kildare, Mayo, Westmeath and Wicklow, forwarded by Hugh B. Feeley to Jean-Paul Reding (listed below) are described as *I. subarmata* in Reding (2024). Recent correspondence with Hugh B. Feeley stated that ‘*it is quite safe to reinstate subarmata from the British-Irish Isles, since the species has been described from these regions....*’ (Jean-Paul Reding *pers. comm.*, 15 April 2025). To date all adult male specimens checked in Ireland by Hugh B. Feeley have been *I. subarmata*, as described by Despax (1936) and Reding (2024), based on penial armature. Consequently, all *Isoperla* in Ireland should henceforth be listed as *I. subarmata*. *Isoperla grammatica* should no longer be considered an accepted Irish plecopteran species.

The phenomenon of ‘crumpled wings’ (Feeley and Macadam, 2021) is listed where observed and the variation in wing length across species and populations, i.e. brachyptery and microptery (e.g. Costello, 1988) is noted for several species. Note all adults were fully winged (i.e. macropterous) and all male Perlidae were brachypterous unless otherwise stated. One observation of Entomophthora, or fungal infection, is also noted.

All specimens were identified using Macadam, Feeley and Doe (2022) or Hynes (1977). Specimens collected by Bryan Kennedy, Méabh Kennedy, Eoin Kennedy, and Ryan Mitchell were determined by Hugh B. Feeley. A subset of specimens collected by Stewart Rosell and David McGrath were checked and verified by Hugh B. Feeley. Specimens collected by Helen M. Barber-James and Adam Mantel were determined by Amy Weir or Helen M. Barber-James. Also included are 24 records submitted to the National Biodiversity Data Centre (NBDC) by members of the public in 2024. Where these records were accompanied by a photograph Hugh B. Feeley confirmed or amended the specimen identity and updated the NBDC records, where necessary. These records may not have sex denoted and are indicated in this paper by NBDC in parenthesis after the collector.

All records will be forwarded to the National Biodiversity Data Centre to update the dataset “Stoneflies (Plecoptera) of Ireland” (Feeley, 2025). Records are also forwarded to the Centre for Environmental Data and Recording (CEDaR) in Northern Ireland.

The records

CAPNIIDAE

Capnia atra Morton, 1896

MAYO: Lough Beltra, east shore (off R312) (M080985), 24♂♂24♀♀ 2 April 2024, Hugh B. Feeley.

All individuals were brachypterous. One female had crumpled wings.

Zwicknia bifrons (Newman, 1839)

MAYO: Lough Mask, shore at Paddy's, Cappaduff West (M086658), 7♂♂1♀ 30 March 2024, Hugh B. Feeley.

All males were micropterous as shown in Plate 2 in Feeley *et al.* (2024) while the female was macropterous.

CHLOROPERLIDAE

Chloroperla tripunctata (Scopoli, 1763)

ANTRIM: Collin Glen lower, near weir (J272714), 1♀ 27 April 2024, Stewart Rosell.

This is a new county record for this species.

SLIGO: Ballyghnatrillick River, Glenriff Valley (G740499), 1♀ 23 June 2024, Ryan Mitchell, det. Hugh B. Feeley.

WATERFORD: Araglin River, Coum Bridge (S248036), 1♂1♀ and 3 larvae 26 April 2024. Glenary River, bridge west of Glenabbey (Castle Road) (S185189), 6♂♂7♀♀ and 2 larvae 26 April 2024. Mahon River, Crough Wood (S333067), 4♂♂ and 2 larvae 26 April 2024. River Tay, Ballykilmurry Bridge (S309050), 6♂♂1♀ and 2 larvae 26 April 2024, all Hugh B. Feeley and Jan-Robert Baars.

Siphonoperla torrentium (Pictet, 1841)

ANTRIM: Collin Glen lower, near weir (J272714), 1♀ and 1 larvae 27 April 2024 and Collin Glen upper, below waterfall (J267723), 1♂1♀ 27 April 2024. Black Mountain, windy gap (gorge) (J291732), 1♀ 28 April 2024. Cave Hill stream (J325802), adult undetermined 25 May 2024, all Stewart Rosell.

CAVAN: Chapel Lake stream, bridge upstream Blackwater Kells confluence (N615950), 3♀♀ 2 July 2024. Nadreegeel Lough stream, Assan Bridge (N553961), 3♂♂5♀♀ 3 July 2024. River Blackwater (Kells), just upstream of Lough Ramor, Virginia (N604871), 1♂7♀♀ 3 July 2024, all Hugh B. Feeley.

CLARE: Knockalough Stream, Knockalough (R143626), 1 larvae 06 May 2024, David McGrath. River Fergus, Poplar Bridge (R271911), 5♂♂ 29 May 2024 and Addroon Bridge (R359878), 1♂ 30 May 2024, Hugh B. Feeley. Fanore (M163082), adult undetermined 12 June 2024, Gerard Lane (NBDC record).

DOWN: Mourne Park (J266163), 1 larvae 30 March 2024, Helen M. Barber-James.

DUBLIN: Owendoher River, Cruagh (bridge on R116) (O138227), 4 larvae 26 February 2024, Jan-Robert Baars.

GALWAY: Lough Corrib, Cappacorroe (southwest of Cong) (M134534), 1♂ 16 April 2024, Bryan Kennedy, det. Hugh B. Feeley.

MEATH: Moynalty River, Carlanstown Bridge (N764792), 1♀ 4 July 2024, Hugh B. Feeley.

SLIGO: Ballyghnatrillick River, Glenriff Valley (G740499), 2♂♂4♀♀ 23 June 2024, Ryan Mitchell, det. Hugh B. Feeley.

WATERFORD: Araglin River, Coum Bridge (S248036), 5♂♂3♀♀ and 3 larvae 26 April 2024. Curraghateskin Stream, junction of R671 and Curraghateskin (S195109), 1 larvae 26 April 2024. Glenary River, bridge west of Glenabbey (Castle Road) (S185189), 3♂♂2♀♀ (two males with crumpled wings) 26 April 2024. Mahon River tributary, Coumahon (small tributary at car park) (S313081), 5 larvae 26 April 2024 and Coumahon (south of River Mahon, near car park) (S313085), 1♂ and 2 larvae 26 April 2024. Mahon River, Crough Wood (S333067), 14♂♂4♀♀ (one male with crumpled wings) and 6 larvae 26 April 2024, Mahon Falls (S314085), 16♂♂10♀♀ (one male with crumpled wings) and 5 larvae 26 April 2024. River Tay, Ballykilmurry Bridge (S309050), 29♂♂7♀♀ (one male with crumpled wings) and 5 larvae 26 April 2024. Tributary of Araglin, Bohadonmountain (S255024), 2♂♂ and 4 larvae 26 April 2024 and ford southeast of Coum Bridge (S248036), 5♂♂2♀♀ and 1 larvae 26 April 2024. Tributary of River Dalligan, Bolattin (S285019), 1♀ and 6 larvae 26 April 2024. Tributary of River Deehil, bridge on L3019, Kilrossanty, adjacent church (S310028), 2 larvae 26 April 2024. Tributary of the River Nier, viewpoint, Lachtnafranke - north of Glendalough (S245176), 1♂ and 2 larvae 26 April 2024, all Hugh B. Feeley and Jan-Robert Baars.

WICKLOW: Avonmore River, southeast of Sally Gap (O144098), 5♂♂4♀♀ 18 June 2024. Lough Dan, Scout Centre Shore (O157025), 3♂♂2♀♀ 18 June 2024. Lough Tay (east shore), Luggala Estate (O163072), 12♂♂8♀♀ 18 June 2024. Lough Bray Lower, south shore (O138159), 3♂♂2♀♀ 19 June 2024. Vartry Reservoir Lower, west shore (O198024), 1♀ 19 June 2024, all Hugh B. Feeley. Glencullen River, Knocksink Wood (O210184), 1♀ 21 July 2024, Ryan Mitchell, det. Hugh B. Feeley.

LEUCTRIDAE

Leuctra fusca (Linnaeus, 1758)

CARLOW: Madlin River, Old Leighlin (S663653), 2 larvae 24 June 2024, Jan-Robert Baars.

CAVAN: Lislea River, bridge on N3 (N622861), 2 larvae 5 June 2024, Jan-Robert Baars and 3 larvae 3 July 2024, Hugh B. Feeley. Moynalty River (Barora River), Corlat Bridge on R191 (N685887), 1 larva 5 June 2024, Jan-Robert Baars. Chapel Lake stream, bridge upstream Blackwater Kells confluence (N615950), 5 larvae 2 July 2024. River Blackwater (Kells), bridge 2km NE of Bailieborough (N697981), 6 larvae 2 July 2024, bridge downstream of Barker's

Bridge (N635966), 8 larvae 2 July 2024, Killinkere Bridge (N610935), 3 larvae 2 July 2024, upstream of Lough Ramor, Virginia (N604871), 2 larvae 3 July 2024 and Stramaquerty Bridge (N594921), 5 larvae 3 July 2024. Nadreegeel Lough stream, Assan Bridge (N553961), 5 larvae 3 July 2024 and Dunancory Bridge (N590881), 3 larvae 3 July 2024, all Hugh B. Feeley.

CLARE: Creegh River, Creegh Village (R034668), 7 larvae 3 July 2024. Cloon River, Cranny Village (R167604), 1 larvae 4 July 2024. Owenslieve River, Lana waterfall (R269662), 3 larvae 22 July 2024. Aille River, Doolin (R075970), 8 larvae 14 August 2024, all David McGrath.

CORK: Canrooska River (Glengarriff Nature Reserve) (V918570), 2♂♂ 22 August 2024, Hugh B. Feeley.

FERMANAGH: Inishturk Island, Lower Lough Erne (H082630), 3♂♂1♀ and 3 larvae 19 September 2024, Helen M. Barber-James, det. Amy Weir.

KERRY: Staigue River, near fort car park (Castlecove) (V609632), 1♀ 16 August 2024, Hugh B. Feeley.

KILDARE: River Liffey, New Bridge (La Touche) (N869099), 3 larvae 9 May 2024, Jan-Robert Baars.

KILKENNY: Dinin River, Castlecomer (S536730), 3♂♂ 24 June 2024 and Dysart Bridge (S536730), 3 larvae 24 June 2024. Headwaters of Douglas River, bridge northwest of Cloghpook (S548657), 3 larvae 24 June 2024. Kings River, bridge south of Friary (Callan) (S415438), 3 larvae 24 June 2024. Monefilm River, Castlewarren Bridge (S610609), 1 larva 24 June 2024. Tributary of Dinin River, southwest of Coan (S586685), 5 larvae 24 June 2024, all Jan-Robert Baars.

LAOIS: Delour River, Ballycarrol, Picnic area (S291980), 3 larvae 10 June 2024. Owenbeg River, bridge westnorthwest of Boleybawn (Cloghoge) (S479810), 2 larva 10 June 2024. River Nore, Castletown New Road Bridge (S341921), 1 larvae 10 June 2024 and Poorman's Bridge (S407859), 2 larvae 10 June 2024. Tonet River, upstream bridge north of Keeloge North (S231948), 4 larvae 10 June 2024. Monavea River, northeast of graveyard on R431 (S620778), 1 larva 24 June 2024. River Fushoge, bridge east of Cappalug (S678793), 1 larva 24 June 2024, all Jan-Robert Baars.

LIMERICK: Castletroy (R627581), adult undetermined 17 October 2024, Padraig Punch (NBDC record).

LONGFORD: Ballymulvey (N170572), adult undetermined 31 August 2024, Lawrence Cloake (NBDC record).

LOUTH: Mattock River, Slane Road bridge, Collon (N997817), 2 larvae 5 June 2024, Jan-Robert Baars and 4 larvae 16 July 2024, Hugh B. Feeley. White River, New Bridge (O046856), 1 larva 5 June 2024, Jan-Robert Baars. Mattock River, Boyd's Bridge (O018807), 1♀ and 7 larvae 16 July 2024, new bridge upstream River Boyne confluence (O036756), 3 larvae 16 July 2024, and Wood Mill Bridge (L2318) (O004769), 3♂♂ and 2 larvae 16 July 2024, all Hugh B.

Feeley.

MEATH: Kilmainham River, bridge upstream of Whitewood Lough (N789891), 2 larvae 4 June 2024. River Dee, Kilbride Bridge (N845844), 1 larva 4 June 2024, all Jan-Robert Baars. Moynalty River (Barora River), Clogagh Bridge (N675916), 6 larvae 4 July 2024, Carlanstown Bridge (N764792), 2 larvae 4 July 2024 and Moynalty Bridge (N733827), 4 larvae 4 July 2024. Blackwater (Kells), Daly's Bridge (N652803), 1 larvae 8 July 2024, Headford Bridge (R163) (N762759), 5 larvae 8 July 2024, Mabe's Bridge (N736773), 2 larvae 8 July 2024 and Bloomsbury Bridge (N793739), 3 larvae 9 July 2024. River Boyne, Beactive Bridge (N860597), 2 larvae 10 July 2024, upstream Knightsbrook River confluence (N825566), 1 larvae 10 July 2024 and Slane Bridge (N964736), 1 larvae 11 July 2024. Devlin's River, bridge south of Grangegeeth crossroads (N955785), 3 larvae 11 July 2024. Mattock River, ford at Devlin's River confluence (O001763), 5 larvae 11 July 2024, all Hugh B. Feeley.

MONAGHAN: Fane River, bridge in Inniskeen (H932070), 1 larva 5 June 2024. River Lagan, bridge on R179 north of Kingscourt (N801982), 1 larva 5 June 2024, all Jan-Robert Baars.

OFFALY: Near Birr (N143076), adult undetermined 9 September 2024, Rachel Mc Kenna (NBDC record).

ROSCOMMON: Cloonfad River, Blackford Bridge (M492710), 3 larvae 5 June 2024. Springfield River, Ballaghaugeag Bridge (M662705), 1 larva 5 June 2024, all Jan-Robert Baars.

SLIGO: Ballyghnatrillick River, Glenriff Valley (G740499), 2♂♂3♀♀ 23 June 2024. Union Wood stream, Collooney (G680281), 19♂♂14♀♀ 27 July 2024 and 1♀ 5 August 2024. Garvoge River, Doorly Park (G707354), 5♂♂2♀♀ 28 September 2024, all Ryan Mitchell, det. Hugh B. Feeley.

TIPPERARY: Kilmastulla River, bridge on R500 (Garryclogher) (R840727), 1 larva 11 June 2024. Nenagh River, Ballysollshaun Bridge (R915739), 2 larvae 11 June 2024 and Cloghinch Bridge (R961694), 2 larvae 11 June 2024, all Jan-Robert Baars. River Suir, bridge north of Farranacahill on N62 (S123777), 2 larvae 11 June 2024, Jan-Robert Baars and Ballybeg (S138170), adult undetermined 14 September 2024, Louise Garcia (NBDC record).

TYRONE: Aghyaran (H159819), adult undetermined 24 September 2024, David Craig (NBDC record).

WICKLOW: Blessington (Pollaphuca Reservoir) (N971127), 1♂ 4 January 2024, Brian Murray (NBDC record). Glencullen River, Knocksink Wood (O210184), 33♂♂19♀♀ 21 July 2024, 25♂♂13♀♀ 16 August 2024 and 6♂♂3♀♀ 5 October 2024, Ryan Mitchell, det. Hugh B. Feeley.

***Leuctra hippopus* Kempny, 1899**

ARMAGH: Small stream on Clontigora Hill (J093183), 5♂♂1♀ 3 March 2024, Hugh B. Feeley.

This is a new county record for this species.

CARLOW: Aughnabriskey River, Scullogue Bridge (S826478), 1♂2♀♀ 27 February 2024. River Burren, Head of Burren Bridge (S826548), 14♂♂5♀♀ and 1 larva 27 February 2024. Tributary of River Clody, bridge in Kilbrannish South (near Kelly's Quarter) (S854556), 1 larva 27 February 2024, all Jan-Robert Baars.

In the River Burren, several brachypterous males were recorded while the females had shortened wings, i.e. not fully macropterous.

CLARE: Lower spring, Keelhill (M333030), 2 larvae 9 April 2024, David McGrath.

DONEGAL: Moneydarragh, south of Gleneely (C546427), 1 larva 19 May 2024, Jan-Robert Baars.

DUBLIN: Owendoher River, Cruagh (bridge on R116) (O138227), 10♂♂2♀♀ and 1 larva 26 February 2024, Jan-Robert Baars and Massey Wood (near Hell Fire), Killakee Road (O121237), 3♂♂2♀♀ 30 April 2024, Hugh B. Feeley.

GALWAY: Lough Corrib, Cappacorloge (SW of Cong) (M134534), 3♂♂ 16 April 2024 and Glann Road (M060487), 2♂♂2♀♀ 16 April 2024, all Bryan Kennedy, det. Hugh B. Feeley. Tributary of Derrywee River, bridge west of Tooravoola (R353) (M557009), 1♀ 1 May 2024, Jan-Robert Baars.

MAYO: Glore River, bridge near Cloonfellagh (L1918) (M389894), 5♂♂3♀♀ (one male with crumpled wings) 1 April 2024, Eoin Kennedy, det. Hugh B. Feeley. Gweedaney, bridge southeast of Curraunboy (F852405), 5♂♂1♀ 8 April 2024. Srahduggan Stream, ford northwest of Srahduggan (F866071), 1♂ 8 April 2024, all Bryan Kennedy, det. Hugh B. Feeley.

SLIGO: Union Wood stream, Collooney (G680281), 3♂♂1♀ 24 February 2024, 3♂♂1♀ 11 April 2024 and 1♀ 8 May 2024, Ryan Mitchell, det. Hugh B. Feeley.

WATERFORD: Araglin River, Coum Bridge (S248036), 7♂♂6♀♀ 26 April 2024. Mahon River tributary, Coumahon (south of River Mahon, near car park) (S313085), 15♂♂10♀♀ 26 April 2024. Mahon River, Mahon Falls (S314085), 1♂ 26 April 2024. River Tay, Ballykilmurry Bridge (S309050), 1 larvae 26 April 2024. Tributary of Araglin, Bohadoonmountain (S255024), 4♂♂2♀♀ 26 April 2024 and ford southeast of Coum Bridge (S248036), 3♂♂1♀ 26 April 2024. Tributary of River Dalligan, Bolattin (S285019), 8♂♂3♀♀ and 2 larvae 26 April 2024. Tributary of River Deehil, bridge on L3019, Kilrossanty, adjacent church (S310028), 1 larvae 26 April 2024. Tributary of the River Nier, viewpoint, Lachtnafrankie - north of Glendalough (S245176), 2♂♂4♀♀ and 1 larvae 26 April 2024, all Hugh B. Feeley and Jan-Robert Baars.

WEXFORD: Boro River, headwaters west of Slievebaun (S808430), 3♂♂1♀ 27 February 2024. River Clody, Kilbrannish South (S848548), 2♂♂ and 3 larvae 27 February 2024, all Jan-Robert Baars.

WICKLOW: Glendasan River (old mining works, R756) (T099981), 3♂♂1♀ 17 April 2024. Lough Bray Upper inflow (off Military Road) (O141151), 5♂♂2♀♀ 30 April 2024, all Hugh B. Feeley.

***Leuctra inermis* Kempny, 1899**

ANTRIM: Collin Glen lower, near weir (J272714), 1♂1♀ 27 April 2024 and Collin Glen upper, below waterfall (J267723), 3♂♂2♀♀ 27 April 2024. Black Mountain, windy gap (gorge) (J291732), adult undetermined 28 April 2024, all Stewart Rosell.

CARLOW: River Burren, Head of Burren Bridge (S826548), 4 larvae 27 February 2024. Tributary of River Clody, bridge in Kilbrannish South (near Kelly's Quarter) (S854556), 1 larva 27 February 2024, all Jan-Robert Baars.

CLARE: Lough Avalla well, Lough Avalla loop (R295950), 6 larvae 1 March 2024. Lower spring, Keelhill (M333030), 10 larvae 9 April 2024, all David McGrath. Moyree River, Addergoole (R402915), 6♂♂7♀♀ 1 May 2024, Jan-Robert Baars.

DONEGAL: Meenagassan Brook, Golan Bridge (C423428), 1♀ and 6 larva 18 May 2024, Jan-Robert Baars.

DUBLIN: Owendoher River, Cruagh (bridge on R116) (O138227), 1 larva 26 February 2024, Jan-Robert Baars. Massey Wood (near Hell Fire), Killakee Road (O121237), 1♀ 30 April 2024, Hugh B. Feeley.

GALWAY: Duniry River, bridge upstream Ballinasack Bridge (M691087), 2 larvae 1 May 2024. Headwaters of Owendalulleegh River, Flaggy Bridge (M611025), 3 larvae 1 May 2024. Beagh River, 1.5km upstream of Lough Cutra (M466004), 1♂2♀♀ 1 May 2024, all Jan-Robert Baars.

KILKENNY: Headwaters of Douglas River, bridge northwest of Cloghpook (S548657), 1♀ 24 June 2024. Tributary of Dinin River, southwest of Coan (S586685), 2♂♂5♀♀ 24 June 2024, all Jan-Robert Baars.

LAOIS: Tonet River, upstream bridge north of Keeloge North (S231948), 1♂1♀ and 1 larva 10 June 2024, Jan-Robert Baars.

LOUTH: Ferryhill Glen Stream, Ferryhill Road (J113191), 5 larvae 3 March 2024, Hugh B. Feeley.

MAYO: Gweedaney, bridge southeast of Curraunboy (F852405), 1♂ 8 April 2024, Bryan Kennedy, det. Hugh B. Feeley.

MEATH: River Blackwater (Kells), Donaghpatrick Bridge (N819723), 3 larvae 9 July 2024, Hugh B. Feeley.

SLIGO: Ballyghnatrillick River, Glenriff Valley (G740499), 1♂1♀ 23 June 2024, Ryan Mitchell, det. Hugh B. Feeley.

TIPPERARY: Clodaigh River, bridge north of Castlehill (R981650), 1♂ 11 June 2024, Jan-Robert Baars.

WATERFORD: Araglin River, Coum Bridge (S248036), 1♂ and 12 larvae 26 April 2024. Curraghteskin Stream, junction of R671 and Curraghteskin (S195109), 1♂1♀ and 5 larvae 26

April 2024. Glenary River, bridge west of Glenabbey (Castle Road) (S185189), 2♂♂2♀♀ and 1 larvae 26 April 2024. Mahon River tributary, Coumahon (south of River Mahon, near car park) (S313085), 1♂3♀♀ 26 April 2024. Mahon River, Crough Wood (S333067), 2♂♂1♀ and 6 larvae 26 April 2024 and Mahon Falls (S314085), 14♂♂10♀♀ and 6 larvae 26 April 2024. River Tay, Ballykilmurry Bridge (S309050), 16♂♂12♀♀ and 4 larvae 26 April 2024. Tributary of Araglin, Bohadoonmountain (S255024), 2♂♂2♀♀ 26 April 2024 and ford southeast of Coum Bridge (S248036), 3♂♂3♀♀ and 4 larvae 26 April 2024. Tributary of River Dalligan, Bolattin (S285019), 3 larvae 26 April 2024. Tributary of the River Nier, viewpoint, Lachtnafrankee - north of Glendalough (S245176), 1♀ and 1 larvae 26 April 2024 and viewpoint, seepage (S246176), 2♂♂ 26 April 2024, all Hugh B. Feeley and Jan-Robert Baars. **WEXFORD:** Boro River, headwaters west of Slievebaun (S808430), 7 larvae 27 February 2024, Jan-Robert Baars.

WICKLOW: Glendasan River (old mining works, R756) (T099981), 2♀♀ 17 April 2024. Glenmacnass River (500m downstream of Mall Brook) (O122007), 1♂1♀ 17 April 2024. Lugduff, upstream of Upper Lake, Glendalough (T110961), 1♂2♀♀ 17 April 2024. Lough Bray Upper inflow (off Military Road) (O141151), 2♂♂2♀♀ 30 April 2024. Avonmore River, southeast of Sally Gap (O144098), 1♂1♀ 18 June 2024, all Hugh B. Feeley.

***Leuctra nigra* (Olivier, 1811)**

ANTRIM: Glendum River, Slievedaorragh Forest (D166279), 1♂ 28 April 2023, Adam Mantel, det. Helen M. Barber-James.

This is a new county record for *Leuctra nigra*.

DONEGAL: Lough Eske, Ardnamona Wood (G964847), 28♂♂26♀♀ 21 April 2024 and 3♂♂1♀ 22 July 2024, Ryan Mitchell, det. Hugh B. Feeley.

SLIGO: Union Wood stream, Collooney (G680281), 6♂♂5♀♀ 11 April 2024, 1♂ 20 April 2024, 1♀ 8 May 2024 and 2♀♀ 15 May 2024, Ryan Mitchell, det. Hugh B. Feeley.

Most males exhibited the additional upstanding processes on tergite VII, as shown in Plate 3 in Feeley *et al.* (2024), the dominant form of adult males in Ireland.

NEMOURIDAE

***Amphinemura sulcicollis* (Stephens, 1836)**

ANTRIM: Collin Glen lower, near weir (J272714), 3♂♂2♀♀ 27 April 2024, Stewart Rosell.

CLARE: Moyree River, Addergoole (R402915), 2♀♀ 1 May 2024, Jan-Robert Baars.

DONEGAL: Meenagassan Brook, Golan Bridge (C423428), 1♀ and 1 larva 18 May 2024, Moneydarragh, south of Gleneely (C546427), 1♂ 19 May 2024, all Jan-Robert Baars.

GALWAY: Beagh River, 1.5km upstream of Lough Cutra (M466004), 2♂♂6♀♀ 1 May 2024, Duniry River, bridge upstream Ballinasack Bridge (M691087), 1 larva 1 May 2024. Headwaters of Owendalulleegh River, Flagggy Bridge (M611025), 1♂ and 3 larvae 1 May 2024. Owenwee

River, downstream of Tawnaghbeg Lough (M016466), 6♂♂13♀♀ and 2 larvae 3 May 2024. Tributary of Lough Adrehid, Letterfore (M060442), 1♀ and 1 larva 3 May 2024, all Jan-Robert Baars.

KILKENNY: Dinin River, Castlecomer (S536730), 1♂ 24 June 2024. Tributary of Dinin River, southwest of Coan (S586685), 1♂2♀♀ 24 June 2024, all Jan-Robert Baars.

SLIGO: Ballyghnatrillick River, Glenriff Valley (G740499), 1♂3♀♀ 23 June 2024, Ryan Mitchell, det. Hugh B. Feeley.

TIPPERARY: Clodaigh River, bridge north of Castlehill (R981650), 1♂ 11 June 2024, Jan-Robert Baars.

WATERFORD: Tributary of River Dalligan, Bolattin (S285019), 3 larvae 26 April 2024, Hugh B. Feeley and Jan-Robert Baars.

WEXFORD: River Clody, Kilbrannish South (S848548), 1 larva, 27 February 2024, Jan-Robert Baars.

WICKLOW: Lough Bray Lower, northwest shore (O133164), 1♂2♀♀ 19 June 2024 and south shore (O138159), 12♂♂4♀♀ 19 June 2024, all Hugh B. Feeley.

***Nemoura avicularis* Morton, 1894**

CARLOW: River Burren, Head of Burren Bridge (S826548), 1 larva 27 February 2024, Jan-Robert Baars.

This is the first record in County Carlow and the southeast of the country.

LEITRIM: Lough Gill, Parkes Castle (G782350), 2♂♂1♀ (two males and one female with crumpled wings) 10 April 2024, Bryan Kennedy, det. Hugh B. Feeley.

MAYO: Ballintober, on road (L1703) [found on person while out cycling] (M147787), 1♀ 20 April 2024. River Robe, bridge on L25116 (M362723), 1♀ 21 April 2024 and Crossboyne (M337710), 2♂♂2♀♀ (one male and one female with crumpled wings) 21 April 2024, all Hugh B. Feeley.

SLIGO: Lough Gill, Saint Angela's (G750343), 5♂♂7♀♀ 3 April 2024. Garvoge River, Doorly Park (G707354), 1♂ 17 April 2024, all Ryan Mitchell, det. Hugh B. Feeley.

***Nemoura cinerea* (Retzius, 1783)**

ANTRIM: Tower Road (D292225), 1 larvae 12 April 2024, Helen M. Barber-James.

CLARE: Lower spring, Keelhilla (M333030), 1 larvae 9 April 2024, David McGrath, det. Amy Weir. Bog site near Lough Bunny (Poulroe) (R386960), 1♀ 1 May 2024, Jan-Robert Baars.

DERRY/LONDONDERRY: Drumnaph (C845041), 1♂2♀♀ 1 April 2023, Helen M Barber-James, det. Amy Weir.

This is a new county record for this species.

DONEGAL: Lough Eske, Ardnamona Wood (G964847), 1♂2♀♀ 21 April 2024, Ryan Mitchell, det. Hugh B. Feeley. Lough Fad, north shoreline (C539396), 3♂♂1♀ 19 May 2024,

Jan-Robert Baars.

DOWN: Glen Stream, Kilbroney Park, Rostrevor (J186182), 1♂ 25 April 2023, Adam Mantel, det. Amy Weir. Trevenadenagh Wood (J401467), 1 larvae 27 April 2023, Adam Mantel, det. Amy Weir.

FERMANAGH: Castle Coole, near Lough Coole (H256438), 1♂1♀ 10 May 2024, Ryan Mitchell, det. Hugh B. Feeley.

The only previous record for this species in Co. Fermanagh is from Lower Lough MacNea.

GALWAY: Lough Corrib, Cappacorroe (southwest of Cong) (M134534), 1♂ 16 April 2024 and Glann Road (M060487), 15♂♂10♀♀ (one male with *Entomophthora*) 16 April 2024, Bryan Kennedy, det. Hugh B. Feeley.

MAYO: Lough Beltra, east shore (off R312) (M080985), 1♂ 2 April 2024, Hugh B. Feeley. Lough Conn, Massbrook (G167068), 1♀ 14 April 2024, Bryan Kennedy, det. Hugh B. Feeley.

SLIGO: Garvoge River, Doorly Park (G707354), 2♀♀ 9 April 2024. Union Wood stream, Collooney (G680281), 1♀ 11 April 2024, 2♀♀ 20 April 2024 and 1♀ 8 May 2024, all Ryan Mitchell, det. Hugh B. Feeley.

TYRONE: Drumcairn (H877701), 1♀ 1 April 2023, Adam Mantel, det. Amy Weir.

This is a new county record for this species.

WATERFORD: Mahon River, Mahon Falls (S314085), 1 larvae 26 April 2024. Tributary of Araglin, Bohadonmountain (S255024), 1♂ 26 April 2024, all Hugh B. Feeley and Jan-Robert Baars.

Nemurella pictetii Klapálek, 1900

CARLOW: River Burren, Head of Burren Bridge (S826548), 3 larvae 27 February 2024, Jan-Robert Baars.

This is a new county record for this species.

CLARE: Poulnalour stream, Poulnalour (R308954), 4 larvae 18 March 2024. Lower spring, Keelhill (M333030), 29 larvae 9 April 2024. Tobarcolumncille well, Glencolumcille South (R317995), 3 larvae 9 April 2024. Tobarsheela, Corcomroe (M295089), 19 larvae 16 May 2024. Tobardhu, Derrynavahagh (M176059), 14 larvae 27 May 2024. Perills Well, Curratober (R690871), numerous larvae 7 September 2024. Tobar na nOlc, Curratober (R692870), 1 larvae 7 September 2024, all David McGrath.

DONEGAL: Lough Eske, Ardnamona Wood (G964847), 1♂2♀♀ 21 April 2024, Ryan Mitchell, det. Hugh B. Feeley.

DOWN: Mourne Park (J266163), 2♂♂ 30 March 2024, Helen M. Barber-James.

DUBLIN: Owendoher River, Cruagh (bridge on R116) (O138227), 1♂1♀ 26 February 2024, Jan-Robert Baars.

These are the earliest adult records published for Irish populations although February is

within the expected period for adults (see species information in Feeley *et al.* (2016) or Macadam *et al.* (2022) for details).

MEATH: River Boyne, Kilcarn Bridge (N885655), 1 larvae 9 July 2024, Hugh B. Feeley.

TYRONE: Ulster American Folk Park (H431794), 12 larvae 7 August 2024, Helen M. Barber-James, det. Amy Weir.

WATERFORD: Mahon River tributary, Coumahon (small tributary at car park) (S313081), 2 larvae 26 April 2024 and Coumahon (south of River Mahon, near car park) (S313085), 3 larvae 26 April 2024. River Tay, Ballykilmurry Bridge (S309050), 1♀ 26 April 2024, all Hugh B. Feeley and Jan-Robert Baars.

WICKLOW: Vartry Reservoir Lower, west shore (O198024), 2♂♂ 19 June 2024, Hugh B. Feeley.

***Protonemura meyeri* (Pictet, 1841)**

ANTRIM: Ardcurus, Rathlin Island (D120514), 1♀ 12 April 2024, Helen M. Barber-James. Collin Glen lower, near weir (J272714), 1♂ 27 April 2024. Collin Glen upper (J267723), 1♀ 27 April 2024 and below waterfall (J267723), 1♀ 27 April 2024. Black Mountain, above windy gap gorge (J288735), 1♀ 28 April 2024 and at windy gap (gorge) (J291732), 1♂2♀♀ 28 April 2024. Cave Hill stream (J325802), adult undetermined 25 May 2024, all Stewart Rosell.

ARMAGH: Small stream on Clontigora Hill (J093183), 1♂ 3 March 2024, Hugh B. Feeley.

CARLOW: Aughnabrisk River, Scullogue Bridge (S826478), 2♂♂1♀ 27 February 2024, Jan-Robert Baars.

CORK: Castlemartyr Woods (W957737), adult undetermined 28 April 2024, John O'Sullivan (NBDC record).

DONEGAL: Lough Eske, Ardnamona Wood (G964847), 2♀♀ 21 April 2024, Ryan Mitchell, det. Hugh B. Feeley.

DOWN: Mourne Park (J266163), 2♂♂ 30 March 2024, Helen M. Barber-James. Yellow Water picnic area (J208223), adult undetermined 7 April 2024, Owen Beckett (NBDC record).

DUBLIN: Owendoher River, Cruagh (bridge on R116) (O138227), 6♂♂4♀♀ 26 February 2024, Jan-Robert Baars.

GALWAY: Headwaters of Owendalulleegh River, Flaggy Bridge (M611025), 1 larva 1 May 2024, Jan-Robert Baars.

KERRY: Tralee-Fenit Greenway (Q836150), adult undetermined 14 April 2024, Richard Moloney (NBDC record).

LOUTH: Ferryhill Glen Stream, Ferryhill Road (J113191), 1♂ and 2 larvae 3 March 2024, Hugh B. Feeley.

MAYO: Srah River, bridge on R300 (M118724), 1♀ 30 March 2024, Hugh B. Feeley. Glone River, bridge near Cloonfellagh (L1918) (M389894), 2♀♀ 1 April 2024, Méabh Kennedy, det.

Hugh B. Feeley. Lough Beltra, east shore (off R312) (M080985), 1♀ 2 April 2024, Hugh B. Feeley. Glenturk, bridge upstream Carrowmore Lake (F869284), 1♀ 8 April 2024, Bryan Kennedy, det. Hugh B. Feeley.

SLIGO: Union Wood stream, Collooney (G680281), 1♀ 24 February 2024, Ryan Mitchell, det. Hugh B. Feeley.

WATERFORD: Araglin River, Coum Bridge (S248036), 1♀ 26 April 2024. Glenary River, bridge west of Glenabbey (Castle Road) (S185189), 1♀ and 1 larvae 26 April 2024, Hugh B. Feeley and Jan-Robert Baars. Mahon River, Mahon Falls (S314085), 4♂♂21♀♀ 26 April 2024. River Tay, Ballykilmurry Bridge (S309050), 14♂♂6♀♀ 26 April 2024. Tributary of Araglin, Bohadonmountain (S255024), 6♂♂9♀♀ 26 April 2024 and ford southeast of Coum Bridge (S248036), 1♂1♀ 26 April 2024. Tributary of the River Nier, viewpoint, Lachtnafrankie - north of Glendalough (S245176), 3♂♂1♀ 26 April 2024, all Hugh B. Feeley and Jan-Robert Baars.

WEXFORD: Boro River, headwaters west of Slievebaun (S808430), 4 larvae 27 February 2024. River Clody, Kilbrannish South (S848548), 1♂ and 1 larva 27 February 2024, all Jan-Robert Baars.

WICKLOW: Devil's Glen (T242987), adult undetermined 30 March 2024, Joshua Clarke (NBDC record). Glendasan River, Bridge upstream Glenealo River confluence (T123969), 2♀♀ 17 April 2024. Glenmacnass River (500m downstream of Mall Brook) (O122007), 1♂ 17 April 2024. Lugduff, upstream of Upper Lake, Glendalough (T110961), 2♂♂2♀♀ 17 April 2024, all Hugh B. Feeley.

***Protonemura praecox* (Morton, 1894)**

DUBLIN: Owendoher River, Cruagh (bridge on R116) (O138227), 7♂♂3♀♀ 26 February 2024, Jan-Robert Baars and Massey's Wood (near Hell Fire), Killakee Road (O121237), 1♀ 30 April 2024, Hugh B. Feeley.

KERRY: Tomies Wood River, off small road (V912878), 1♀ 20 April 2023, 1.4 km upstream of small road (west tributary, Coomclochan) (V907867), 2♀♀ 21 April 2023 and 850m upstream of small road (V911870), 2♀♀ 21 April 2023, all Jan-Robert Baars.

LOUTH: Ferryhill Glen Stream, Ferryhill Road (J113191), 1♂ and 2 larvae 3 March 2024, Hugh B. Feeley.

All adult records listed here for *Protonemura praecox* are also listed in Feeley and Baars (2024). The records for counties Louth and Kerry are new county records for this species. Adult records are now confirmed for counties Dublin, Kerry, Louth and Wicklow, with historical larval records available for Antrim, Cork, Mayo and Tipperary (Feeley, 2021).

PERLIDAE

***Dinocras cephalotes* (Curtis, 1827)**

ANTRIM: Inver River, Glenariff (D221190), 1 larvae 6 September 2024, Cathal McNaughton

(NBDC record).

SLIGO: Grange River, Cloontyprocklis (G650495), 1 larvae 27 September 2024, Conall Bonner (NBDC record).

TIPPERARY: Glengarra Wood (R926189), 1 larvae 5 March 2024, Simmone Flanagan (NBDC record) and (R928281), 1 larvae 5 March 2024, Kate Yeung (NBDC record).

***Perla carlukiana* Klapálek, 1907**

CORK: Bweeng (W497884), 1♀ 2 June 2024, Jim Quinn (NBDC record).

The species *Perla carlukiana* was reinstated after Reding (2023) and is considered endemic to Ireland and Great Britain. *P. bipunctata* Pictet, 1833 is no longer an accepted Irish species. Note this species will key out as *P. bipunctata* in Macadam *et al.* (2022) (and Hynes (1977)) but should be considered *P. carlukiana*.

PERLODIDAE

***Diura bicaudata* (Linnaeus, 1758)**

CLARE: Lough Avalla well, Lough Avalla loop (R295950), 1 larvae 1 March 2024, David McGrath.

DUBLIN: Owendoher River, Cruagh (bridge on R116) (O138227), 1 larvae 26 February 2024, Jan-Robert Baars.

MAYO: Lough Mask, shore at Paddy's, Cappaduff West (M086658), 1♂ 30 March 2024. Lough Beltra, east shore (off R312) (M080985), 1♀ 2 April 2024, all Hugh B. Feeley.

All females collected in Mayo exhibited brachyptery, while males exhibited microptery.

WATERFORD: Mahon River, Mahon Falls (S314085), 2♀♀ 26 April 2024. Tributary of Araglin, Bohadonmountain (S255024), 1 larvae 26 April 2024. Tributary of River Dalligan, Bolattin (S285019), 1♂1♀ and 3 larvae 26 April 2024, all Hugh B. Feeley and Jan-Robert Baars.

WICKLOW: Lugduff, upstream of Upper Lake, Glendalough (T110961), 2♂♂ 17 April 2024, Hugh B. Feeley.

All males collected in Waterford and Wicklow were micropterous, while all females were macropterous.

***Isoperla subarmata* Despax, 1936**

ANTRIM: Collin Glen (upper, below waterfall) (J267723), 1♀ 27 April 2024, Stewart Rosell.

CAVAN: River Blackwater (Kells), Killinkere Bridge (N614933), 1 larva 5 June 2024, Jan-Robert Baars. Nadreegeel Lough stream, Assan Bridge (N553961), 1 larvae 3 July 2024, Hugh B. Feeley.

CLARE: River Fergus, Addroon Bridge (R359878), 4 larvae 1 May 2024, Jan-Robert Baars, and 4♂♂3♀♀ 30 May 2024 and Poplar Bridge (R271911), 3♂♂7♀♀ 29 May 2024, all Hugh B. Feeley. Moyree River, Addergoole (R402915), 2♀♀ 1 May 2024, Jan-Robert Baars. Fanore

(M163082), adult undetermined 12 June 2024, Gerard Lane (NBDC record). Creegh River, Creegh Village (R034668), 1 larvae 3 July 2024, David McGrath.

CORK: Monard Glen (W639762), adult undetermined 16 May 2024, Tim Butter (NBDC record).

DONEGAL: Meenagassan Brook, Golan Bridge (C423428), 1 ♀ and 1 larva 18 May 2024, Jan-Robert Baars.

DOWN: Yellow Water Picnic Area (J207222), adult undetermined 7 April 2024, Owen Beckett (NBDC record).

DUBLIN: Owendoher River, Cruagh (bridge on R116) (O138227), 1 larva 26 February 2024, Hugh B. Feeley.

GALWAY: Beagh River, 1.5km upstream of Lough Cutra (M466004), 2 ♂♂ 1 ♀ 1 May 2024. Duniry River, bridge upstream Ballinasack Bridge (M691087), 1 larva 1 May 2024. Headwaters of Owendalulleagh River, Flaggy Bridge (M611025), 5 larvae 1 May 2024. Tributary of Derrywee River, bridge west of Tooravoola (R353) (M557009), 3 larvae 1 May 2024. Owenwee River, downstream of Tawnaghbeg Lough (M016466), 2 ♂♂ 2 ♀♀ and 2 larvae 3 May 2024, all Jan-Robert Baars.

KERRY: Glanageenty (Q946142), adult undetermined 12 June 2024, Anneke O' Connor (NBDC record). Tomies East (V888994), adult undetermined 14 July 2024, Louise Garcia (NBDC record).

KILKENNY: Dinin River, Castlecomer (S536730), 1 ♀ and 1 larva 24 June 2024. Headwaters of Douglas River, bridge northwest of Cloghpook (S548657), 1 larva 24 June 2024. Monefilm River, Castletown Bridge (S610609), 1 larva 24 June 2024. Oldtown River, bridge upstream Munster River confluence (S392467), 1 larva 24 June 2024. Tributary of Dinin River, southwest of Coan (S586685), 1 larva 24 May 2024, all Jan-Robert Baars.

LAOIS: Delour River, Ballycarrol, Picnic area (S291980), 3 larvae 10 June 2024. River Bauteogue, upstream bridge in Timahoe (S536902), 2 larvae 10 June 2024. Owenbeg River, bridge westnorthwest of Boleybawn (Cloghoge) (S479810), 1 larva 10 June 2024. River Nore, Castletown New Road Bridge (S341921), 3 larvae 10 June 2024 and Poorman's Bridge (S407859), 3 larvae 10 June 2024. Tonet River, upstream bridge north of Keeloge North (S231948), 2 larvae 10 June 2024, all Jan-Robert Baars.

LOUTH: Ferryhill Glen Stream, Ferryhill Road (J113191), 5 larvae 3 March 2024, Hugh B. Feeley.

MEATH: Kilmainham River, bridge upstream of Whitewood Lough (N789891), 1 larva 4 June 2024, Jan-Robert Baars.

MONAGHAN: Fane River, bridge in Inniskeen (H932070), 1 larva 5 June 2024, Jan-Robert Baars.

ROSCOMMON: Cloonfad River, Blackford Bridge (M492710), 2 larvae 5 June 2024. River Suck, Ballyforan Bridge (M816463), 1♂ 12 June 2024, all Jan-Robert Baars.

TIPPERARY: Clodaigh River, bridge north of Castlehill (R981650), 1♂ and 2 larvae 11 June 2024. Kilmastulla River, bridge on R500 (Garryclogher) (R840727), 1 larva 11 June 2024. Nenagh River, Cloghinch Bridge (R961694), 2♂♂ and 4 larvae 11 June 2024, all Jan-Robert Baars.

WATERFORD: Araglin River, Coum Bridge (S248036), 1 larvae 26 April 2024. Curraghteskin Stream, junction of R671 and Curraghteskin (S195109), 2 larvae 26 April 2024. Glenary River, bridge west of Glenabbey (Castle Road) (S185189), 5 larvae 26 April 2024. River Tay, Ballykilmurry Bridge (S309050), 2 larvae 26 April 2024. Tributary of Araglin, Bohadoonmountain (S255024), 3 larvae 26 April 2024. Tributary of River Deehil, bridge on L3019, Kilrossanty, adjacent church (S310028), 1 larvae 26 April 2024. Tributary of the River Nier, viewpoint, Lachtnafrankee - north of Glendalough (S245176), 1 larvae 26 April 2024, all Hugh B. Feeley and Jan-Robert Baars.

WEXFORD: River Clody, Kilbrannish South (S848548), 2 larvae 27 February 2024, Jan-Robert Baars.

Note this species will key out as *Isoperla grammatica* (Poda, 1761) in Macadam *et al.* (2022) (and Hynes (1977)) but should be considered *I. subarmata*.

Specimens forwarded to Jean-Paul Reding by Hugh B. Feeley, and listed in Reding (2024), included the following previously reported in Feeley *et al.* (2023): **DUBLIN:** River Dodder, 1.3km upstream of reservoir upstream distributary (O111201) 1♂ 20 June 2022; **KILDARE:** Painstown River, Painstown Bridge (N940243) 1♂1♀ 13 June 2022; **MAYO:** Srahduggan stream, ford northwest of Srahduggan (F866071) 1♂ 27 April 2022, collected by B. Kennedy, identified by H. B. Feeley. Finny River, bridge southwest of Finny (M010586) 1♀ 5 June 2022, H. B. Feeley; **WESTMEATH:** River Brosna, Ballinagore (N356396) 1♂ 5 May 2022, H. B. Feeley; **WICKLOW:** King's River, bridge northwest of Lockstown Upper (N978034) 2♂♂1♀ 7 June 2022, H. B. Feeley.

TAENIOPTERYGIDAE

Brachyptera risi (Morton, 1896)

ANTRIM: Ardcurus, Rathlin Island (D120514), 9 larvae 12 April 2024, Helen M. Barber-James. Collin Glen upper, below waterfall (J267723), adult undetermined 27 April 2024, side stream (J269725), adult undetermined and side stream (J268723), 1♂1♀ 27 April 2024, all Stewart Rosell.

CORK: Mullinhassig Wood (W426755), adult undetermined 3 April 2024, Mike O'Sullivan (NBDC record).

DOWN: small stream, Redburn Country Park, Holywood (J399771), 2 larvae 2 April 2024,

Helen M. Barber-James.

DUBLIN: Owendoher River, Massey Wood (near Hell Fire), Killakee Road (O121237), 1♀ 30 April 2024, Hugh B. Feeley.

KERRY: Glanageenty (Q946142), adult undetermined 12 June 2024, Anneke O' Connor (NBDC record).

LOUTH: Ferryhill Glen Stream, Ferryhill Road (J113191), 14 larvae 3 March 2024, Hugh B. Feeley.

MAYO: Srah River, Bridge on R300 (M118724), 1♂ 30 March 2024, Hugh B. Feeley.

SLIGO: Union Wood stream, Collooney (G680281), 1♀ 20 April 2024 and 1♀ 8 May 2024. Ballyghnatrillick River, Glenriff Valley (G740499), 1♀ 23 June 2024, all Ryan Mitchell, det. Hugh B. Feeley.

TIPPERARY: Glenary River, Russellstown (S191188), adult undetermined 8 May 2024, Louise Garcia (NBDC record).

WATERFORD: Araglin River, Coum Bridge (S248036), 1♂ and 1 larvae 26 April 2024. Glenary River, bridge west of Glenabbey (Castle Road) (S185189), 1♂ 26 April 2024. Tributary of Araglin, Bohadonmountain (S255024), 1♂ 26 April 2024. Tributary of the River Nier, viewpoint, Lachtnafrankie - north of Glendalough (S245176), 1 larvae 26 April 2024, all Hugh B. Feeley and Jan-Robert Baars.

WICKLOW: Glendasan River, old mining works, R756 (T099981), 1♀ 17 April 2024 and bridge upstream Glenealo River confluence (T123969), 3♀♀ 17 April 2024. Glenmacnass River, 500m downstream of Mall Brook (O122007), 1♂ 17 April 2024. Lugduff, upstream of Upper Lake, Glendalough (T110961), 1♂1♀ (one female with crumpled wings) 17 April 2024, all Hugh B. Feeley.

Acknowledgements

Helen Barber-James thanks Ric and Hazel Else for helping with logistics on Rathlin Island. David McGrath would like to acknowledge that the majority of the Co. Clare records were made with a grant from the National Parks and Wildlife Service, small recorders grant SPU RG53-2024. Jan-Robert Baars thanks Meghan Finnegan, Chris Uduala and Liam Vainio-Mattila for their assistance.

References

- Costello, M. J. (1988) Observations on wing-length polymorphism in stoneflies (Plecoptera: Insecta). *Irish Naturalists' Journal* **22**: 474-478.
- Despax, R. (1936) Contribution à l'étude du genre *Chloroperla* (Pictet) (*Isoperla* Banks). *Bulletin de la Société d'histoire naturelle de Toulouse* **69**: 337-398.
- Feeley, H. (2025) Stoneflies (Plecoptera) of Ireland, National Biodiversity Data Centre, Ireland,

accessed 06 April 2025 <<https://maps.biodiversityireland.ie/Dataset/225>>

- Feeley, H. B. (2021) A review of records of *Protonemura praecox* (Morton) (Plecoptera: Nemouridae) records in Ireland and first report of adult specimens in nearly 40 years. *Irish Naturalists' Journal* **38**: 63-68.
- Feeley, H. B. and Baars, J-R. (2024) New records of the stonefly *Protonemura praecox* (Morton) (Plecoptera, Nemouridae) from the southwest and east of Ireland *Irish Naturalists' Journal* **41**: 114-116.
- Feeley, H. B., Baars, J-R. and Kelly-Quinn, M. (2016) *The stonefly (Plecoptera) of Ireland: distribution, life histories and ecology*. National Biodiversity Data Centre, Waterford, Ireland.
- Feeley, H. B., Barber-James, H. M., Kennedy, B., Kenny, A., McGrath, D., Miles, G., Mitchell, R. and Baars, J-R. (2024). Stonefly (Plecoptera) records from Ireland in 2023, with additional records from 2009 to 2022. *Bulletin of the Irish Biogeographical Society* **47**: 164-184.
- Feeley, H. B., Kennedy, B., Mitchell, R. and Baars, J-R. (2023). Adult stonefly (Plecoptera) records from Ireland in 2022. *Bulletin of the Irish Biogeographical Society* **46**: 25-38.
- Feeley, H. B. and Macadam, C. R. (2021) Observations of crumpled wings in stoneflies (Plecoptera). *Entomologist's Record and Journal of Variation* **133**: 25-27.
- Feeley, H. B., Mitchell, R. and Macadam, C. R. (2024) The occurrence and dominance of an unusual male form of the stonefly *Leuctra nigra* (Oliver) (Plecoptera: Leuctridae) in Ireland - with a description of the infrasubspecific f. *hibernica*. *Entomologist's Monthly Magazine* **160**: 67-71.
- Hynes, H. B. N. (1977) A key to the adults and nymphs of British stoneflies (Plecoptera) with notes on their ecology and distribution. Third edition. *Scientific Publications of the Freshwater Biological Association* **Number 17**. 92pp.
- Illies J. (1952) Die Europäischen arten der plecopterengattung *Isoperla* Banks (= *Chloroperla* Pictet) (Mit einem beitrage zur analyse der verbreitungsgeschichte einer fließwasserbewohnenden gattung). *Beiträge zur Entomologie* **2**: 369-424.
- Macadam, C. R., Feeley, H. B. and Doe, J. (2022) British and Irish stoneflies (Plecoptera): keys to the adults and larvae with notes on their distribution, life histories and ecology. *Scientific Publications of the Freshwater Biological Association* **Number 73**. 216pp.
- Reding, J-P. G. (2023) Steps towards a revision of the *Perla bipunctata* Pictet, 1833 species complex (Plecoptera: Perlidae). *Fragmenta entomologica* **55**: 221-262.
- Reding, J-P. G. (2024) *Les Plécoptères du Massif du Jura et du Nord des Alpes occidentales: Guide d'identification au genre et à l'espèce des larves*. Independently published, Neuchâtel, Switzerland. **Volume 1**. 256pp.

AN ANNOTATED CHECKLIST OF *CAREX* L. (SEDGE) SPECIES IN CO. MEATH (H22), IRELAND

Margaret Norton

Tinode, Manor Kilbride, Blessington, Co. Wicklow, Ireland.

e-mail <kilnorbot200@gmail.com>

Abstract

An annotated checklist is provided of the *Carex* L. (Sedge) species in Co. Meath (H22), Ireland. The predominately lowland topography of this county supports a range of habitat types suited to that genus. The first record, relative frequency and known habitats of each taxon within Co. Meath are given.

Key words: Ireland, *Carex*, sedges, county, Meath, annotated, checklist.

Introduction

The predominately lowland topography of Co. Meath supports a range of habitat types suited to *Carex* (Sedges). Spanned by many rivers and their catchments, the most extensive of which are the Boyne and Blackwater, it also includes the Boyne Canal and Royal Canal. Marl-rich lakes and fen peats within the kame and kettle topography of northwest Meath, lakeshores in the drumlin belt of north Meath, raised bogs of west Meath, poorly-drained soils in the relatively flat land of southeast Meath and the estuarine saltmarshes of coastal east Meath, all combine to provide a further range of wetland habitat types. The calcareous grasslands in the esker-rich southwest Meath, sand dunes of coastal east Meath, acid grasslands at Bellewstown, dry heathy grounds of Slieve Breagh and Slieve na Calliagh, and broadleaved woodlands scattered through the county, comprise distinct habitat types which support a further suite of *Carex* species associated with dry to moist ground.

The earliest *Carex* records for Co. Meath date from the start of the nineteenth century (Wade, 1804). Many of these are from Curragha Bog, the term ‘bog’ at that time used to indicate marshy ground. While the village of Curragha is located in Co. Meath, the ‘bog’ straddled the Dublin/Meath county boundary. By 1887 it was reported to be ‘all gone except one bog-hole about thirty feet long by ten wide (in summer), and a stream, and some deep ditches into it. All land is reclaimed’ (Hart, 1887). Unfortunately, the historical records from this important site did not specify whether the individual sedge species occurred in the Dublin or Meath section of the ‘bog’. Nonetheless these early *Carex* records are important indicators of a habitat now lost. Likewise, early records from other sites within the county provide a baseline against which the impact of subsequent habitat changes can be measured.

The following checklist employs the taxonomy, nomenclature and sequence adopted by Stace

(2019). Synonyms are given for first records where that used for the published record differs to Stace. The status of species within Ireland follows Jebb (2019). The relative frequency and habitats of each taxon within Co. Meath are given. The interpretation of species occurrence in the county is then formulated in light of the distribution maps for Ireland in *Plant Atlas 2020* (Stroh *et al.*, 2023). In general, only first records are given, with additional records cited for particularly rare or significant taxa. The first record may exist in more than one state: a hitherto unpublished field record, a herbarium specimen, or a published record.

Place names are given according to the Discovery Series maps, scale 1:50000 (Ordnance Survey (of) Ireland 1992-2025). Exceptions include the vernacularly-named town of Enfield [= Innfield], the Mayden/Maiden Tower [= 'Tower' beside Lady's Finger], the Boyne Obelisk [a now-destroyed monument by Obelisk Bridge at Oldbridge], the locally-named Caraguban [an area of limestone cliffs *circa* 2km north of Duleek] and Freehan Lough [= Freekan Lough]. Other exceptions are accompanied by the equivalent place name [in square brackets] as given on the Discovery Series maps. The island of Ireland (incorporating the Republic of Ireland and Northern Ireland) is referred to as Ireland. The term Meath or Co. Meath is applied in the sense of the biological vice county of Meath (H22) formally defined as 'The administrative county of Meath, together with that part of the urban district of Drogheda which lies on the right (south) bank of the River Boyne' (Webb, 1980). Recent records are accompanied, when available, by four-figure Irish National Grid references (IGR). In the case of earlier records, place names were often applied in a general sense. For example, records by Praeger from 'Enfield & near' or 'Navan & westwards' refer to full day excursions, most probably starting at the train station in Enfield or Navan respectively. Such excursions typically consisted of 12-hour days during which an average of 20 to 25 miles [*circa* 32 to 40km] was covered (Praeger, 1901). Thus, it is not possible to allocate accurate grid references to Praeger's records. The majority of records created during the 1960s were collected on a hectad (10km²) basis using the British Grid Extension (BGX), an extrapolation of the British Ordnance Survey National Grid which covered Ireland (Webb, 1954). These have not been converted to IGR as it is not possible to do so with any acceptable degree of accuracy. Each BGX hectad was allocated a name (e.g. Nobber-BGX), though the records apply to the hectad rather than to the named town or village.

Annotations by Praeger (1896-1900) in his copy for Co. Meath of the *London catalogue of British plants* (Hanbury, 1895) are denoted by RLP-*ms*. Records abstracted from Brunner's fieldwork diaries (Brunner, 1935-1966) are denoted by JPB-*ms*. Surnames are used for determiners and authors of published works. Initials are used for recorders as follows: BNFC = Belfast Naturalists' Field Club, BSBI = Botanical Society of Britain and Ireland, CB = Con Breen, C  C = Colm  n    Cr  od  in, DM = David Moore, DMcC = David McClintock, DAW = David A. Webb, DNFC = Dublin Naturalists' Field Club, DS = Donal Synnott, EFL = Edward F. Linton, FHP = Franklyn H. Perring, HN = Hannah Northridge, IC = Isaac Carroll, JA = John

Adams, JB = John Ball, JSF = John S. Faulkner, KD = Katy Duff, JPB = James P. Brunker, MN = Margaret Norton, MJPS = Mary J. P. Scannell, RLP = Robert L. Praeger, RN = Robert Northridge, SR = Sylvia Reynolds and TCGR = Tim C. G. Rich. Some records are supported by herbarium specimens lodged in **DBN** (National Botanic Gardens of Ireland), **BM** (British (Natural History) Museum) and/or **E** (Royal Botanic Garden Edinburgh). Comments by MN are placed in square brackets [], while records which require further consideration are placed in curly brackets { }.

ANNOTATED CHECKLIST

Carex paniculata L. **Greater Tussock-sedge**

Native. Localised and uncommon in Meath. Damp to wet, often peaty, slightly base-rich, soils. Scrubby margins of fen peat and cutover raised bogs; fringe vegetation of the Royal Canal; wet scrub; lakeside marshes. Widespread through much of Ireland.

First record: Enfield & near (1896; RLP-*ms.*); H22 (Praeger, 1901). {An earlier record from ‘shady watery spots’ at the Bog of Curragha (Wade, 1804) may have referred to Dublin or Meath}

Carex diandra Schrank **Lesser Tussock-sedge**

Native. Locally common. Calcareous marshes; wet fen peat. Most plentiful in base-rich northwest Meath and esker-rich southeast Meath, the later including margins of the Royal Canal; also present in the drumlin belt of north Meath, particularly in the base-rich eastern half; occasional elsewhere. Widespread in lowland Ireland.

First record: as *Carex teretiuscula*, Mathews’ Hill [Mathews’s Hill] (1897; Praeger, 1901).

Carex otrubae Podp. **False Fox-sedge**

Native. Scattered locations in the southern two-thirds of the county, seldom in any quantity. Heavy damp soils, often with some flushing. By fresh water run-off on the upper fringe of saltmarshes on the rivers Boyne and Nanny; rushy fields; streamsides; margins of raised bogs and fen peat; ditches; occasional in lakeside grasslands and calcareous marshes. Widespread by the coast in Ireland, its inland distribution is predominantly in the southern half of the island, on the northern margin of which lies Meath.

First record(s): as *Carex vulpina*, ‘Laytown, Drogheda’ (1874; IC **BM**, det. David); Kilmessan (1896; RLP-*ms.*); H22 (Praeger, 1901).

Carex spicata Huds. **Spiked Sedge**

Native. A single Meath record. A rare sedge in Ireland which has a scattered distribution.

First record: grassy verge by bog at Kildalkey 2009 (MN, conf. Porter) N75.

Carex divulsa Stokes **Grey Sedge**

Native. Localised and occasional. Grassy habitats, usually on base-rich soils. Roadside and trackway verges; hedgebanks and woodland margins; rough open grassland; waste ground.

Most frequent in the southern third of Ireland, its recorded range has expanded since the 1960s. Two subspecies of *Carex divulsa* are recognised by Stace (2019) within the British Isles, the common ssp. *divulsa* and the much rarer ssp. *leersii*. Applying this taxonomy, only *C. divulsa* ssp. *divulsa* is known to occur in Co. Meath [see note on ssp. *leersii* below]. However, the taxonomic understanding of *C. divulsa* is still evolving. Studies over a wider geographical range have treated ssp. *leersii* at species level as *C. leersii*, and have split ssp. *divulsa* into seven species (Molina *et al.*, 2008). It is possible that future studies of *C. divulsa* in Meath may reveal some of these additional taxa.

First record: of *Carex divulsa*: Laytown (1896; Praeger, 1901).

First record: of *Carex divulsa* ssp. *divulsa*: W-facing limestone bluff, Caraguban, Duleek (1978; DS **DBN**, det. Chater, 1995); H22 (Jermy *et al.*, 1982).

{A specimen of *C. divulsa* ssp. *leersii* (F.W. Schultz) W. Koch. exists from the ‘roadside near Tara Hill’ (1909; JA **DBN**, det. David, 1980; Scannell and Synnott, 1990). However, this could refer to the Tara Hill in Co. Meath or that in Co. Wexford. Another specimen, annotated ‘leersii?’ from Caraguban, Duleek (1978; DS **DBN**; Scannell and Synnott, 1990) was subsequently re-determined by Chater in 1995 as ssp. *divulsa*}

***Carex arenaria* L. Sand Sedge**

Native. Locally abundant. Grasslands of fixed dunes; dune trackways; bare sand of foredunes; infill of gravels and sands on the Boyne estuary. Widespread on the coast of Ireland.

First record: seacoast near Bettystown (1849; JB **E**); H22 (Praeger, 1901).

***Carex disticha* Huds. Brown Sedge**

Native. Locally common. Wet, usually base-rich, soils. Lakeside marshes in the drumlin belt of north Meath, particularly in the base-rich eastern half; lakeside marshes in base-rich northwest Meath; wetlands in esker-rich southwest Meath including those by the Royal Canal; poorly-drained soils in the flat land of southeast Meath; elsewhere in riverside marshes, on fen peat and on reclaimed raised bogs. This sedge is widespread in Ireland.

First record: Bective (1896; RLP-*ms.*); H22 (Praeger, 1901).

***Carex remota* L. Remote Sedge**

Native. Widespread and common. Damp, often winter-wet, shaded ground. Woodlands; sides of hedgerow ditches; shaded riversides; lakeside scrub. Widespread in Ireland.

First record: Navan & westward (1896; RLP-*ms.*); H22 (Praeger, 1901). {The earlier undated specimen by Moore (most likely pre-1866; **DBN**) from ‘side of the River Boyne near Drogheda’ did not specify whether collected on the south (Meath H22) or north (Louth H31) riverbank. His record of *Vulpia fasciculata* from ‘Sand-hills on the south side of the Boyne, near Drogheda’ (Moore and More, 1866) indicates that at least some of his botanising was done on the Meath side of the river}

***Carex leporina* L. Oval Sedge**

Native. Localised and occasional, never in any quantity. Damp, most usually base-poor, soils. Rough grasslands; roadside and trackway verges; woodland margins; heathy ground. Widespread in Ireland, though somewhat more thinly so in the base-rich midlands.

First record: as *Carex ovalis*, Slieve Bregh [= Breagh] (1900; RLP-*ms.*); H22 (Praeger, 1901).

***Carex echinata* Murray Star Sedge**

Native. Locally common, often in quantity. Most usually on base-poor, water-logged, soils. Raised bogs; wet heathy ground; rarely in calcareous marshes and hillside flushes. A widespread sedge through most of Ireland.

First record: Enfield & near (1896; RLP-*ms.*); H22 (Praeger, 1901).

***Carex dioica* L. Dioecious Sedge**

Native. Localised and very rare. Fen peat; a calcareous flush. Of limited distribution through much of Ireland, it is most widely recorded in vice counties to the north and mid-west of the island. A species of rich fens and base-rich wetlands of high nature conservation value.

First record: Commons, Duleek, with *Carex hostiana* O0469 (1966; JPB & DNFC; JPB-*ms.*; DS DBN; Synnott, 1967).

Additional records: Commons, Duleek (1967; DS DBN) and (1968; MJPS DBN; Synnott, 1969); seepage at Roristown N7655 (1970; CB; Young, 1972); Freehan Lough within the Lough Shesk area (1971; CB DBN); Newtown Lake within the Lough Shesk area (1971; CB; Young, 1972) & (1972; CB & BSBI; CB DBN; Breen, 1973); fen peat at Ballinrig [now partially drained], with *Pinguicula vulgaris*, *Schoenus nigricans* and *Carex lepidocarpa* N8249 (1989; MN); small calcareous flush on north side of stream-valley at Ardsallagh [subsequently drained for afforestation], with *Eriophorum latifolium*, *S. nigricans* and *C. hostiana* N8962 (1997; CB & PR; CB DBN); marsh on fen peat by east shore of Bleach Lough at Baltrasna, a patch of female plants with *P. vulgaris*, *S. nigricans*, *C. hostiana* and *C. lepidocarpa* N5176 (2022; MN).

***Carex canescens* L. White Sedge**

Native. Localised and rare. Wet, usually peaty, base-poor soils. Lakeside marshes in the northern half of the county; a single location in mid-west Meath. This sedge has a predominantly northern distribution in Ireland, on the southern margin of which the majority of its Meath sites are located.

First record(s): as *Carex curta*, bog 4 miles [circa 6.4 km] ENE of Athboy (7 May 1896; RLP-*ms.*); marsh, Navan (7 May 1896; RLP DBN, fide Bennett); bog near Navan (1896; Praeger, 1897) [most probably all referring to the same record].

Additional records: Lough Shesk area (1971; CB) N66; near Connell's Lough [= Freehan Lough] in the Lough Shesk area (1972; CB & BSBI; Breen, 1973); mossy hummock of acid

peat above fringe of *Equisetum fluviatile* and *Carex rostrata* on east shore of Breakey Lough Little [in shaley western half of drumlin belt of north Meath] N7490 (2022; MN); sparsely in wet grassland by Ervey Lough [in shaley western half of drumlin belt of north Meath], with *C. disticha* and *C. echinata* N7693 (2022; MN).

***Carex hirta* L. Hairy Sedge**

Native. Widespread and common. Damp grassy habitats. Marshy fields; riverside pastures; rough grasslands on fen peat; lakeside grasslands; damp trackway verges. Widely distributed in Ireland, with the exception of the most acidic areas.

First record: Athboy (1847; JB E); H22 (Praeger, 1901).

***Carex lasiocarpa* Ehrh. Slender Sedge**

Native. Localised and rare. Marshy to swampy ground by lakes and rivers on moderately base-poor soils. Predominantly a species of northwest and mid-west Ireland, the recent Meath records represent some of its few surviving colonies in the east of the island.

First record: as *Carex filiformis*, bog between Navan and Drogheda (DM; Moore and More, 1866) [possibly referring to the ‘bog by the railway between Navan and Drogheda’ [= Thomastown Bog?] where Moore recorded *Cladium mariscus* (*ibid.*).]

Additional records: about and below Navan (Praeger, 1934); path by River Boyne west of Beuparc (1957; DMcC; Wallace, 1960); Lough Shesk N6167 and nearby Connell’s Lough [= Freehan Lough] N6267 (CÓC; Ó Críodáin, 1988); transitional mire at Ardmaghbreague N7588/N7688 (2019; KD).

***Carex acutiformis* Ehrh. Lesser Pond-sedge**

Native. Widespread and occasional, often in quantity. Nutrient-rich, most usually base-rich, wet habitats. Riverbanks and floodplains of the River Boyne; banks of, and marshy fields by, the Royal Canal; lakeside marshes in the base-rich eastern half of the drumlin belt of north Meath; elsewhere occasional by rivers and lakes, rank vegetation on fen peat, scrub on cutover raised bog and wet woodland. Noted in Meath as ‘widespread, not common’ by Praeger (1901). Within Ireland, it is most widely distributed in the base-rich midlands, with scattered sites elsewhere.

First record(s): as *Carex paludosa*, Bective (27 June 1896; RLP-*ms.*; RLP **DBN**, fide Bennett); reedy margins of the Boyne at Bective (27 June 1896; DNFC; Anon., 1896). [Praeger led the 1896 DNFC excursion to Bective.]

***Carex acutiformis* x *C. acuta* = *C. x subgracilis* Druce**

A hybrid between two native species. A single site in Meath, as yet unreported from elsewhere in Ireland (Stroh *et al.*, 2023). Although present with its *Carex acutiformis* parent at its Meath site, the second parent *C. acuta* was not detected. In Britain, the two species often share habitat, but the flowering period for *C. acuta* precedes that of *C. acutiformis*, and the hybrid is relatively infrequent (Foley and Porter, 2015). The potential for hybridisation in

Ireland is further complicated by the limited distribution of its *C. acuta* parent, which species does however occur at several locations in Co. Meath.

First Irish record: two large stands (each *circa* 20m x 25m) on marly peat at southeast corner of Creeve Lough, between the reedbed of *Phragmites australis* and the winter flood line, with *Carex acutiformis* N5774 (2018; MN, conf. Porter; Norton, 2020).

***Carex riparia* Curtis Greater Pond-sedge**

Native. Localised and occasional. Base-rich, often brackish, marshy ground on margins of still and slow-flowing waterbodies, including rivers, lakesides and canals. Most frequent in the coastal region of east Meath including the tidal sections of the rivers Boyne and Nanny, mouth of the Delvin River, a winter-wet hollow in sand dunes south of South Bull at Mornington, marshy ground at Mosney and previously at Bettystown; also frequent by inter-drumlin lakes in the base-rich eastern half of north Meath including Ballyhoe, Balrath, Corstown, Mandistown, Mentrim, Moynagh and Newcastle loughs; scattered sites elsewhere include margins of the Upper Boyne [= above Navan], a tributary of the Athboy River, the rivers Deel and Rye Water, and the Boyne Canal. A scattered distribution in Ireland where it is most frequent towards the southeast and east coasts, and on the Shannon estuary.

First record: Coonen Hill [N of Dardistown Bridge] (1895; Praeger, 1901); H22 ‘frequent in the extreme east’ [of Meath] (Praeger, 1901). {It is unclear whether the earlier record from Drogheda (1889; EFL **BM**) referred to the south (Meath H22) or north (Louth H31) bank of the River Boyne}

***Carex pseudocyperus* L. Cyperus Sedge**

Native. Localised and very rare, with no recent records. Praeger’s records from Meath may all refer to a single site given that Ferns Lock [Lock at Ferrans] is located *circa* 7km to the E/ENE of Enfield, and both Ferns Lock and Enfield were visited during his itinerary named ‘Enfield’ on 4 July 1896 (RLP-*ms.*). Alternatively, the curation of two specimens (RLP **DBN**) with differently described locations, and the use of the term ‘bog-drains’ in the plural (Praeger, 1897), suggest it may have been present in more than one ditch/drain between Ferns Lock and Enfield. Widespread within the Shannon basin in Ireland, with only scattered sites elsewhere.

First record(s): Enfield (4 July 1896; RLP-*ms.*); bog ditch, Ferns Lock (July 1896; RLP **DBN**); wet drain, east of Enfield (4 July 1896; RLP **DBN**); bog-drains by canal three miles [*circa* 4.8 km] ENE of Enfield, close to the Kildare boundary (1896; Praeger, 1897); near Enfield (1896; Praeger, 1901). {Curragha [Dublin/Meath] (Wade, 1804)}

***Carex rostrata* Stokes Bottle Sedge**

Native. Widespread and common, often abundant. Shallow water and permanently wet soils. Lake margins and ponds; fringe vegetation of the Royal Canal, less frequently by the Boyne Canal; riparian vegetation of slow-flowing rivers; marshes and swampy ground; ditches; wet patches of fen and raised bog peat. A widespread sedge in Ireland.

First record: as *Carex rostrata*, Bective (1896; RLP-*ms.*); as *C. ampullacea*, H22 (Praeger, 1901).

***Carex rostrata* x *C. vesicaria* = *C. x involuta* (Bab.) Syme**

A hybrid between two native species. Plentiful at its single known location in Meath. Accompanied by its *Carex rostrata* parent, its second parent *C. vesicaria* was not evident at the site despite occurring elsewhere in the county. While usually accompanied by both parents in Britain and Ireland, it can also exist in the absence of *C. vesicaria* (Foley and Porter, 2015). This hybrid has a very limited distribution in Ireland, one of its few sites occurring on the north shore of Ballyhoe Lough in Co. Monaghan (FitzGerald, 2022, 2024), the south shore of which lake is in Co. Meath where the hybrid may yet be discovered.

First record: an extensive stand in the drawdown zone of the winter-flooded but summer-dry ground at Garrynabolie in base-rich northwest Meath, with several stands of *Carex rostrata*, the wetland dominated by *Equisetum fluviatile* and *Menyanthes trifoliata* N5474 (2018; MN, conf. Porter; Norton, 2020).

***Carex vesicaria* L. Bladder-sedge**

Native. Localised and uncommon, sometimes plentiful. Permanently wet, usually base-rich, habitats. Swampy marshes and wet scrub by the inter-drumlin lakes of north Meath including Ballyhoe, Ervey, Newcastle and Whitewood loughs; calcareous marshes in esker-rich southwest Meath at Ballynabarny and Galtrim; previously in riverside marshes on the Upper Boyne [= above Navan], not recorded there since the Boyne Arterial Drainage Scheme of 1969-1986. Much of its distribution in Ireland coincides with the northern drumlin belt which stretches from Strangford Lough in Co. Down to Clew Bay in Co. Mayo, and with the region of drumlins in Co. Clare. The majority of its Meath sites are located on the southern fringe of the northern drumlin belt.

First record: Nobber-BGX-04/84 [which includes Whitewood Lough] (1962; DAW); H22 (Jermy *et al.*, 1982). {Bog of Curragha [Dublin/Meath] (Wade, 1804)}

***Carex pendula* Huds. Pendulous Sedge**

Native in Ireland (Jebb, 2019), but more usually as a neophyte in Meath. Localised, seldom plentiful. Damp, often shaded, ground. Possibly native on riversides and by woodland trackways; a neophyte, most probably as a garden escape/discard, in disused quarries and waste grounds, and on roadside verges near habitation. Widespread in Ireland.

First record: in woods of Headfort Castle [= Headfort House, Kells] (1912; BNFC; Anon., 1912).

***Carex sylvatica* Huds. Wood-sedge**

Native. Widespread and occasional. Moist, at least slightly base-rich, partially shaded ground. Broadleaved and mixed woodlands, especially by trackways; occasional in felled woodland and amongst isolated clumps of trees. Sufficiently widespread in Ireland that its sites

were not listed by Praeger (1901), it is still one of the most frequent sedges.

First record: H22 (Praeger, 1901).

***Carex strigosa* Huds. Thin-spiked Wood-sedge**

Native. Localised and rare, with only two recorded locations in Co. Meath. Moist base-rich soils of deciduous woodlands, where it occurs on a shaded streamside, an area of seepage, and on trackway margins. This woodland sedge has a very localised distribution in Ireland.

First record: woods on grounds of Ross House, Lough Sheelin [an area of limestone bedrock] (1938; RLP & DNFC; JPB-*ms.*; Allen, 1938). {Curragha [Dublin/Meath] (Wade, 1804)}

Additional records: sparsely by trackway in broadleaved section of woodland north of carpark at Summerhill Demesne, with *Equisetum telmateia* nearby [which species is associated with seepage] N8447 (1990; MN); still at Summerhill Demesne, extending for *circa* 10m by shaded stream north of carpark N8447 (2022; MN); several large patches on grassy trackway margins west of carpark at Summerhill Demesne, with *Carex sylvatica* N8447 (2024; MN).

***Carex flacca* Schreb. Glaucous Sedge**

Native. Widespread and very common, often plentiful. Base-rich grasslands, most usually on free-draining soils. Open vegetation above marly lake shores; drier sections of calcareous marshes; fixed dunes; esker ridges; disused quarries of limestone-derived gravels and sands, and of limestone rock; roadside cuttings and banks; verges of lime-chipped trackways and railway ballast. The most widespread of the sedges in Ireland.

First record: as *Carex flacca*, Bective (1896; RLP-*ms.*); as *C. glauca*, H22 (Praeger, 1901).

***Carex panicea* L. Carnation Sedge**

Native. Widespread and occasional, seldom in any quantity. Damp to wet, often base-rich, grassy habitats. Calcareous marshes; fen peat and reclaimed raised bogs; marshy grasslands by rivers and lakes; hillside flushes; heathy ground. Widespread in Ireland.

First record: Enfield & near (1896; RLP-*ms.*); H22 (Praeger, 1901).

***Carex laevigata* Sm. Smooth-stalked Sedge**

Native. Localised and very rare, its three Meath sites occur in the northern half of the county. Moist, generally base-poor, soils. Predominantly an upland plant of acid ground in Ireland, and hence absent from much of the base-rich midlands, its Meath sites are situated on the southern margin of its northern range.

First record: near College Cross Roads [= heathy area] N8190 (1988; TCGR, CB & BSBI); H22 (Rich and Woodruff, 1990).

Additional records: sparsely at two locations on gley soils within the broadleaved section of mixed woodlands at Littlewood [north of Slane] N9775 (2013 & 2014; MN); a patch of several plants on unshaded acid peat by east shore of Breakey Lough Little [in shaley western half of the drumlin belt], with *Juncus bulbosus*, *Isolepis setacea*, and *Carex demissa* N7490 (2022; MN).

***Carex binervis* Sm. Green-ribbed Sedge**

Native. Localised and rare in Meath, with all sites located in the northern half of the county. Base-poor soils of open, usually lightly grazed, heathy habitats. Infertile acidic soils of the Slievebeag series (Finch *et al.*, 1983) at Slieve Breagh and at Slieve na Calliagh; heathy ground above White Lough, near College Cross Roads and at Stranaboll [Lough Shesk area]; acid grassland at Bellewstown. Widespread in Ireland, though less so in the base-rich midlands on the margin of which lies Co. Meath.

First record: Oldcastle & Loughcrew [the latter beside Slieve na Calliagh] (1896; RLP-*ms.*); H22 (Praeger, 1901).

***Carex distans* L. Distant Sedge**

Native. Localised and uncommon, never plentiful. Upper saltmarshes and brackish ground by tidal sections of the rivers Boyne and Nanny. A widespread coastal species in Ireland.

First record: Mornington & Mayden Tower (1896; RLP-*ms.*); H22 (Praeger, 1901).

***Carex extensa* Gooden. Long-bracted Sedge**

Native. Localised and uncommon, seldom in any quantity. Uppermost section of saltmarshes on the rivers Boyne and Nanny, including margins of brackish ponds and edges of freshwater irrigation. Widespread on the coast of Ireland, though less extensive on the east coast which includes Co. Meath.

First record: Mornington & Mayden Tower (1896; RLP-*ms.*); Mornington (1896; Praeger, 1901). {The earlier record from the mouth of the Boyne near Drogheda (DM; Moore and More, 1866) did not specify whether on the south (Meath H22) or north (Louth H31) bank of the river. See account of *Carex remota*.}

***Carex hostiana* DC. Tawny Sedge**

Native. Localised and uncommon. Damp base-rich grasslands. Fen peat at Lough Naneagh, Lough Bleach and Newtown Lough; fen peat by the Trim esker at Blackcut and on thin fen peat at Duleek Commons; calcareous marshes by embankment of Royal Canal at Ballynabarny and in the esker-rich area of Kilcarty; small calcareous flush at Ardsallagh; by the Upper Boyne [above Navan] in seepage at Roristown. Widespread through much of Ireland, particularly in the west, now very rare in most of east Ireland.

First record(s): as *Carex fulva* β *hornschurchiana*, heathy ground, Enfield (1896; RLP **DBN**) [not listed from Meath by Praeger (1901)]; frequent over several acres at southwest corner of the Commons, Duleek O0469 [published as new to Meath] (1966; Synnott, 1967).

***Carex flava* group**

The *Carex flava* group, applying the taxonomy adopted by Stace (2019), is represented in Co. Meath by *C. lepidocarpa*, *C. demissa* and *C. viridula*. The taxonomic treatment of the group, in particular the ranking of taxa, varies greatly between authors and is still evolving. In recent

years the main taxa have alternatively been treated at species level (Clapham *et al.*, 1952, 1962, 1987; Stace 2010, 2019) and at subspecies level (Stace, 1991, 1997; Sell and Murrell, 1996; Jermy *et al.*, 2007). Records which do not differentiate between the taxa, either at species or subspecies level, and which lack voucher specimens, are most securely assigned to the *C. flava* group.

First record: as *Carex flava* [group], Enfield & near (1896; RLP-*ms.*); H22 (Praeger, 1901). {Curragha [Dublin/Meath] (Baily, 1833)}

***Carex lepidocarpa* Tausch Long-stalked Yellow-sedge**

Native. Locally common, most usually in base-rich wetlands. Calcareous marshes of esker-rich southwest Meath including marshes by the Royal Canal; lakeside marshes of base-rich northwest Meath; elsewhere on fen peat and by calcareous flushes; previously in riverside marshes of the Upper Boyne [= above Navan], not recorded there since the Boyne Arterial Drainage Scheme of 1969-1986. Widespread through much of Ireland, though avoiding the more base-poor areas.

First record: Drumone-BGX-04/63 (1957; FHP & DAW); H22 (Perring and Walters, 1962).

***Carex demissa* Hornem. Common Yellow-sedge**

Native. Localised and occasional. Wet open habitats, on less base-rich substrates than *Carex lepidocarpa*. Margins of raised bog and wet peat of cutover bogs; lakeside marshes. Possibly under-recorded in Co. Meath where the distinguishing features between this species and *C. lepidocarpa* are not always clearcut. Widespread through most of Ireland.

First record: east margin of Ballivor Bog-BGX-04/61 (1955; DAW); H22 (Perring and Walters, 1962).

***Carex viridula* Michx. Small-fruited Yellow-sedge**

Native. Localised and uncommon. Drawdown zones of marl-rich lakes in northwest Meath. These include the large linear Lough Bane and White Lough, and the smaller Lough Glass North, which were created when water occupied areas of eroded limestone between crag-and-tail features (Meehan, 2012). This, the least frequently recorded of the *Carex flava* group in the county, is abundant on the exposed marl of those lake shores. Elsewhere in Ireland it is of limited distribution, with the majority of post-2000 records from the mid-west of the island.

First record: as *Carex serotina*, H22 (Perring and Walters, 1962).

Additional records: plentiful on exposed marl of drawdown zone at Lough Glass North N5371 (2018; MN & SR, det. Porter); exposed marl on southeast shore at White Lough N5172 (2004; MN, det. Porter) and N5173 (2022; MN); marl-rich drawdown zone on northeast shore at Lough Bane N5571 (2004; MN); abundant on both north and northeast shores at Lough Bane N5471 and N5571 respectively (2022; MN).

***Carex pallescens* L. Pale Sedge**

Native. Localised and rare. Damp grasslands and woodland margins, usually on base-poor

soils. Its Meath sites are in the northern half of the county, on the southern fringe of its predominately northern distribution in Ireland.

First record: single plant on margin of woodland clearing at Littlewood N9775 (2013; MN; Norton, 2021). {Curragha Bog [Dublin/Meath] (Wade, 1804)}

Additional records: damp grassland above calcareous marsh, with some *Calluna vulgaris* nearby, at Oldtully 2021 (MN) N5681; several clumps by trackway through damp willow and alder scrub on southwest shore of Breakey Lough N7390 (2022; MN).

***Carex caryophyllea* Latourr. Spring-sedge**

Native. Localised and occasional, seldom plentiful. Base-rich, often mossy, well-drained banks. Most frequent in esker-rich southwest Meath, base-rich northwest Meath, and coastal east Meath. Esker ridges; short calcareous grasslands on slopes; sand dunes; a limestone outcrop. Of widespread, though somewhat limited, distribution in Ireland, it is not recorded from many of its former sites since 2000 (Stroh *et al.*, 2023).

First record: as *Carex verna*, Drogheda to Boyne Obelisk (1896; RLP-*ms.*); H22 (Praeger, 1901). {Bog of Curragha (Wade, 1804) and Curragha (Baily, 1833) [both Dublin/Meath]}

***Carex pilulifera* L. Pill Sedge**

Native. Localised and uncommon, seldom in any quantity. Base-poor, usually acidic, soils. Cutover raised bogs at Ballivor, Baskinagh Upper, Bogstown, Coolronan, and Jamestown; heathy ground/acid grassland at Bellewstown, Slieve Breagh, near Slieve na Calliagh and in the Lough Shesk area; on a leached area of esker ridge at Baltrasna. Widespread through much of Ireland, though more limited in the base-rich midlands which border on Co. Meath.

First record: Enfield & near (1896; RLP-*ms.*); H22 (*ITB*).

***Carex limosa* L. Bog-sedge**

Native. Localised and rare. Wet, humus-rich, peaty substrates. Despite the name ‘Bog-sedge’, this species in Co. Meath occurs on the margins of shallow fen pools transitioning to bog rather than fully developed bog peat. The majority of sites are in the base-rich area of northwest Meath. These include the marshy lakeside peatlands by the loughs Shesk, Freehan and Newtown; the fen peat near Lough Naneagh; peaty ground to the north of Lough Bane; and an area near Lough Crewe. Elsewhere in the county, there are Praeger records from ENE of Athboy, south of Navan, and raised bogs in Co. Meath near Carbury in Co. Kildare. A species of predominantly western distribution in Ireland due to its association with blanket bogs, it is much less frequent in the very different habitat type of the midlands which border on Co. Meath.

First record(s): bog 4 miles [*circa* 6.4km] ENE of Athboy (5 July 1896; RLP-*ms.*); bog hole, bog south of Navan [= ENE of Athboy] (5 July 1896; RLP **DBN**, fide Bennett); bog between Athboy and Navan (1896; Praeger, 1897; Praeger, 1901) [possibly all referring to the same site]. {Curragha Bog [Dublin/Meath] (Wade, 1804)}

***Carex aquatilis* Wahlenb. Water Sedge**

Native in Ireland. Not recorded in Meath since the 1930s, its continued presence in the county has yet to be confirmed. Its two known sites are within the Boyne catchment. The first is by the River Blackwater in Co. Meath near the Cavan boundary. This is downriver of its stations in Co. Cavan where it was ‘abundant in the River Blackwater between Lough Ramor and the Meath boundary’ (1896; Praeger, 1897) and where it was more recently recorded on the River Blackwater near the outflow from Lough Ramor N6383 (1968; MJPS **DBN**; Reilly, 2001) and (2016; RN & HN). However, the Co. Meath section of the river below O’Daly’s Bridge now supports little riparian flora since the Boyne Arterial Drainage Scheme of 1969-1986. The adjoining land is no longer liable to flooding, though previously indicated as such on the first edition of the Six-inch County Series maps (1833-1846). The second recorded Meath site, below the confluence of the rivers Blackwater and Boyne at Navan, was not directly affected by the drainage scheme. The riparian vegetation there still includes *Carex acuta*, a species formerly confused with *C. aquatilis* (Preston & Croft, 1997). Unfortunately, there are no traceable voucher specimens of *C. aquatilis* from either of its Meath sites. A very rare sedge in Ireland.

First record: in the River Blackwater, near the Cavan boundary (1896; Praeger, 1897). [Most probably the same record as ‘River Blackwater near Daly’s bridge’ (1896; Praeger, 1901)]

Additional record(s): by the Boyne below Navan, in quantity (1937; RLP & DNFC; Allen, 1937); abundant by the Boyne a mile and more [$\geq$ *circa* 1.6km] below Navan (1934-1938; DNFC; Praeger, 1939) [most probably referring to the 1937 record].

***Carex acuta* L. Slender Tufted-sedge**

Native. Localised and uncommon. By the River Boyne from above Navan to above Oldbridge; lakeshore at Whitewood Lough. Of limited and possibly declining distribution in Ireland. Although *Carex acuta* may have been over-recorded in some parts of Ireland due to confusion with other similar species (Faulkner, 2024), plants from the Boyne (1984 & 2005; MN) and Whitewood Lough (2018; MN) were confirmed by Porter, its occurrence by those two waterbodies further confirmed in 2019 during fieldwork by Faulkner.

First record: by River Boyne, Beauparc (1895; RLP **DBN**, fide Bennett; Praeger, 1897). {The earlier record from the Boyne, near Drogheda (DM; Moore and More, 1866) did not specify the south (Meath H22) or north (Louth H31) riverbank, although assigned to H22 by Praeger (1901). See account of *Carex remota*.}

***Carex acuta* x *C. elata* = *C. x prolixa* Fr.**

A hybrid between two native species. Known from a single location in Co. Meath, this taxon is as yet unrecorded elsewhere in Ireland (Stroh *et al.*, 2023). Its site at Whitewood Lough lies within the Kingscourt Rift Valley, a deep suture in the landscape bisecting the drumlin belt of north Meath, in which valley the lake formed when water was impounded by glacial deposits (Meehan, 2012). The hybrid, first recorded by MN and confirmed by Porter, occurred on the

lake margin with both parents. The *Carex acuta* parent, a plant of limited distribution in Ireland, was plentiful. The *C. elata* parent, although present, was often difficult to distinguish in its pure form. The hybrid, previously synthesized by Faulkner (1972, 1973), was confirmed by him during a 2019 visit to the site. He too recorded both parents in what had the appearance of a hybrid swarm (Faulkner, 2019 pers. comm.). In nature, the flowering season of *C. elata* precedes that of *C. acuta* (Foley and Porter, 2015). This, together with the different habitat preferences of the parent species (*C. elata* preferring more base-rich sites than *C. acuta*), may contribute to the scarcity of the hybrid in both Britain and Ireland.

First Irish record: scattered, as loose tussocks, by the water's edge on west shore of Whitewood Lough, with both parents N7988 (2018; MN, det. Porter; Norton, 2020).

Additional records: west shore of Whitewood Lough N7988 (2019; JSF); still at Whitewood Lough N7988 (2022; MN).

***Carex nigra* (L.) Reichard Common Sedge**

Native. Widespread and very common. Base-rich and base-poor wet soils. Habitats include riverside and lakeside marshes; fens and fenny grasslands; raised bogs and wet heathy ground; calcareous marshes and flushes; wet grasslands; wet hollows of sand dunes. A widespread sedge in Ireland.

First record: as *Carex goodenowii*, Enfield, ditch (1896; RLP-*ms.*; RLP **DBN**); H22 (Praeger, 1901).

***Carex nigra* x *C. elata* = *C. x turfosa* Fr.**

A hybrid between two native species. A single known location in Co. Meath at Ballyhoe Lough. Also recorded in Co. Monaghan from the north shore of that lake (FitzGerald, 2022, 2024). Uncommon, though possible under-recorded in Ireland, its distribution is largely governed by the presence of *Carex elata*, the rarer parent.

First record: sward just above the shoreline on west shore of east lake at Ballyhoe Lough, with both parents (2022; MN, conf. Porter) N8495.

***Carex elata* All. Tufted-sedge**

Native. Localised and occasional. Emergent vegetation of base-rich water. Most frequent by lakes in the base-rich eastern half of the drumlin belt of north Meath including those at Ballyhoe, Balrath, Corstown, Mandistown, Mentrim, Newcastle and Whitewood; lime-rich Lough Sheelin in northwest Meath; previously from the Lower Boyne. Its Meath sites are on the eastern margin of its predominantly lakeshore distribution in Ireland.

First record as *Carex stricta*, on the Beuparc banks of the Boyne (1893; DNFC; Anon., 1893). {Bog of Curragha [Dublin/Meath] (Wade, 1804)}

***Carex pulicaris* L. Flea Sedge**

Native. Localised and occasional. Damp grasslands of fen peat; hummocks in calcareous

marshes; occasional on dry calcareous grasslands and on flushed heathy ground. Widely, though not evenly, distributed in Ireland.

First record: Enfield & near (1896; RLP-*ms.*); H22 (Praeger, 1901). {Curragha [Dublin/Meath] (Baily, 1833)}

Acknowledgements

I wish to acknowledge the contribution of the many naturalists, both past and present, whose dedication to fieldwork and skilful fieldcraft generated the records included in this account. A particular acknowledgement and thanks are due to Mike Porter for his determination of, and expert notes on, critical *Carex* taxa. Sincere thanks are extended to Matthew Jebb (Director of the National Botanic Gardens of Ireland) and Colin Kelleher (Keeper of the National Herbarium) for access to specimens at **DBN**, and to Rachael Hynes (Chief Librarian of the National Herbarium) for providing access to manuscript materials. Sincere thanks also to Jim O'Connor (Emeritus Entomologist, National Museum of Ireland) for his advice, encouragement and enthusiasm, always so generously shared, on the many aspects of natural history.

References

- Anon. (1893) Proceedings of Irish Societies, Dublin Naturalists' Field Club. *Irish Naturalist* **2**: 298-299.
- Anon. (1896) Proceedings of Irish Societies, Dublin Naturalists' Field Club. *Irish Naturalist* **5**: 216.
- Anon. (1912) Irish Societies, Belfast Naturalists' Field Club. *Irish Naturalist* **21**: 203-204.
- Allen, C. W. (1937) News of the Societies, Dublin Naturalists' Field Club. *Irish Naturalists' Journal* **6**: 282-283.
- Allen, C. W. (1938) News of the Societies, Dublin Naturalists' Field Club. *Irish Naturalists' Journal* **7**: 96.
- Baily, K. S. (1833) *The Irish flora*. Hodges and Smith: Dublin. [Published anonymously, but known to be the work of Miss Katherine Sophia Baily, later Lady Kane]
- Breen, C. (1973) Lough Shesk, Co. Meath. *Watsonia* **9**: 424.
- Brunker J. P. (1935-1966) Brunker's fieldwork diaries. [Unpublished manuscripts, retained in the library of the National Herbarium, National Botanic Gardens]
- Clapham, A. R., Tutin, T. G. and Moore, D. M. (1987) *Flora of the British Isles* (third edition). Cambridge University Press, Cambridge.
- Clapham, A. R., Tutin, T. G. and Warburg, E. F. (1952) *Flora of the British Isles* (first edition). Cambridge University Press, Cambridge.
- Clapham, A. R., Tutin, T. G. and Warburg, E. F. (1962) *Flora of the British Isles* (second edition). Cambridge University Press, Cambridge.

- Faulkner, J. S. (1972) Chromosome studies on *Carex* section *Acutae* in north-west Europe. *Botanical Journal of the Linnean Society* **65**: 271-301.
- Faulkner, J. S. (1973) Experimental hybridisation of north-west European species in *Carex* section *Acutae* (Cyperaceae). *Botanical Journal of the Linnean Society* **67**: 233-253.
- Faulkner, J. S. (2024) Atlas 2020 – an imperfect masterpiece. *Irish Botanical News* **34**: 28-35.
- Finch, T. F., Gardiner, M. J., Comey, A. and Radford, T. (1983) *Soils of Co. Meath*. [Soil Survey Bulletin No. 37.] National soil survey of Ireland, An Foras Talúntais, Dublin.
- FitzGerald, A. (2022) A selection of Co. Monaghan (H32) specimens donated to the National Herbarium (**DBN**), National Botanic Gardens, Glasnevin: 2015-2020. *Irish Botanical News* **32**: 21-26.
- FitzGerald, A. (2024) *Flora of County Monaghan*. Wordwell, Dublin.
- Foley, M. J. Y. and Porter, M. S. (2015) *Carex* L. In Stace, C. A., Preston, C. D. and Pearman, D. A. (eds) *Hybrid Flora of the British Isles*. Pp. 380-398. Botanical Society of Britain and Ireland, Bristol.
- Hanbury, F. J. (1895) *The London Catalogue of British plants* (ninth edition). George Bell and Sons, London.
- Hart, H. C. (1887) *The Flora of Howth*. Hodges Figgis and Co., Dublin. [Appendix IV includes several records from Co. Meath.]
- Jebb, M. (2019) *Vascular plant synonym workbook*. National Botanic Gardens, Glasnevin. Online at: <<http://botanicgardens.ie/science-and-learning/irish-flora-records>>. (accessed 1 January 2021)
- Jerry, A. C., Chater, A. O. and David, R. W. (1982) *Sedges of the British Isles* (second edition). BSBI Handbook **No. 1**. Botanical Society of the British Isles, London.
- Jerry, A. C., Simpson, D. A., Foley, M. J. Y. and Porter, M. S. (2007) *Sedges of the British Isles* (third edition). BSBI Handbook **No. 1**. Botanical Society of the British Isles, London.
- Meehan, R. (2012) *The Making of Meath: the county's natural landscape history*. Meath County Council, Navan.
- Molina, A., Acedo, C. and Llamas, F. (2008) Taxonomy and new taxa of the *Carex divulsa* aggregate in Eurasia (Section *Phaestoglochin*, Cyperaceae). *Botanical Journal of the Linnean Society* **156**: 385-409.
- Moore, D. and More, A. G. (1866) *Contributions towards a Cybele Hibernica, being outlines of the geographical distribution of plants in Ireland*. Hodges, Smith and Co., Dublin.
- Norton, M. (2020) Three hybrid sedges new to Co. Meath (H22), two of which are additional to the Irish flora. *Irish Botanical News* **30**: 28-30.
- Norton, M. (2021) A miscellany of plant records from Co. Meath (H22) 2000-2019. *Irish Botanical News* **31**: 37-39.
- Ó Críodáin, C. (1988). *Parvocaricetea in Ireland*. Unpublished Ph.D. thesis, University College

Dublin.

Perring, F. H. and Walters, S. M. (eds) (1962) *Atlas of the British flora*. Thomas Nelson and Sons, London.

Praeger, R. L. (1896-1900) Annotations by Praeger (1896-1900) in his copy for Co. Meath of the *London catalogue of British plants* (Hanbury 1895). [Unpublished manuscript, retained in the library of the National Herbarium, National Botanic Gardens, Glasnevin]

Praeger, R. L. (1897) Irish plants, collected chiefly in the province of Leinster in 1896. *Irish Naturalist* **6**: 89-100.

Praeger, R. L. (1901) Irish topographical botany. *Proceedings of the Royal Irish Academy* (third series) **7**: 1-410 (preceded by pp. v-clxxxviii).

Praeger, R. L. (1934) *The botanist in Ireland*. Hodges, Figgis and Co., Dublin.

Praeger, R. L. (1939) A further contribution to the flora of Ireland. *Proceedings of the Royal Irish Academy* **45B**: 231-254.

Preston, C. D. and Croft, J. M. (1997) *Aquatic plants in Britain and Ireland*. Harley Books, Essex.

Reilly, P. A. (2001) *The flora of County Cavan*. Occasional papers **No. 13**. National Botanic Gardens, Glasnevin.

Rich, T. C. G. and Woodruff, E. R. (1990) *The BSBI monitoring scheme 1987-1988*. Two volumes. Report to the Nature Conservancy Council, England.

Scannell, M. J. P. and Synnott, D. M. (1990) *Records for the census catalogue of the flora of Ireland in the Herbarium, National Botanic Gardens, Glasnevin*. Occasional papers **No. 5**. National Botanic Gardens, Glasnevin, Dublin.

Sell, P. [D.] and Murrell, G. (1996) *Flora of Great Britain and Ireland* **5**: Butomaceae - Orchidaceae. Cambridge University Press, Cambridge.

Stace, C. (1991) *New flora of the British Isles* (first edition). Cambridge University Press, Cambridge.

Stace, C. (1997) *New flora of the British Isles* (second edition). Cambridge University Press, Cambridge.

Stace, C. (2010) *New flora of the British Isles* (third edition). Cambridge University Press, Cambridge.

Stace, C. (2019) *New Flora of the British Isles* (fourth edition). C and M Floristics, Suffolk.

Stroh, P. A., Walker, K. J., Humphrey, T. A., Pescott, O. L. and Burkmar, R. J. (eds) (2023) *Plant Atlas 2020: mapping changes in the distribution of the British and Irish flora*. Two volumes. Botanical Society of Britain and Ireland, Durham.

Synnott, D. M. (1967) Recent additions to the flora of counties Meath and Louth. *Irish Naturalists' Journal* **15**: 322-324.

Synnott, D. [M.] (1969) Field meetings 1968: Boyne Valley, 17th August. *Proceedings of the*

Botanical Society of the British Isles **7**: 635.

Wade, W. M. D. (1804) *Plantae rariores In Hibernia inventae; or, habits of some plants, rather scarce and valuable, found in Ireland, with concise remarks on the properties and uses of many of them*. Dublin Society, Dublin.

Wallace, E. C. (compiler) (1960) Plant records. *Proceedings of the Botanical Society of the British Isles* **3**: 394-419.

Webb, D. A. (1954) The distribution maps scheme: a provisional extension to Ireland of the British national grid. *Proceedings of the Botanical Society of the British Isles* **1**: 316-319.

Webb, D. A. (1980) The biological vice-counties of Ireland. *Proceedings of the Royal Irish Academy* **80B**: 179-196.

Young, R. (compiler) (1972) *A report on areas of scientific interest in County Meath*. An Foras Forbartha Teoranta, Dublin.



FIGURE 1. The counties of Ireland. The location of County Meath is indicated by an arrow.

THE STAPHYLINID AND CARABID (COLEOPTERA) FAUNA OF A RESTORED *MOLINIA-JUNCUS ACUTIFLORUS* GRASSLAND IN CO. CORK, IRELAND

Jervis A. Good¹ and Fidelma T. Butler²

¹Glinny, Riverstick, Co. Cork, Ireland.

e-mail <Pygidicrana@gmail.com>

²School of Biological, Environmental and Earth Sciences, University College Cork, Cork, Ireland.

Abstract

An ungrazed *Molinia*-dominated wet grassland plot was restored in 2004 at a lowland farm in Co. Cork, Ireland, by removal of *Molinia* tussocks, re-instatement of grazing with traditional Kerry and Shorthorn cattle, and very occasional cutting. The 0.1 ha plot, and adjacent unrestored dense *Molinia* and *Salix* carr, were surveyed for staphylinid and carabid beetles in 2019-2020. In total, 85 species of staphylinid and 28 species of carabid were recorded, of which 72 and 21 species, respectively, occurred in the restored plot, and 47 and 22 species, respectively, occurred in the unrestored dense *Molinia* and *Salix* carr. There was a high species diversity of *Philhygra* (Staphylinidae) (n = 8 spp.) in the site. Three species (*Acupalpus dubius*, *Philonthus fumarius*, *P. micantoides*) were recognised as being potentially dependent on the open grazed sward, and consequently susceptible to being extirpated by long-term grazing abandonment. Eight species of Carabidae, and 15 species of Staphylinidae, were recorded from emergence traps, but not from pitfall traps, demonstrating their value as a supplementary sampling technique to pitfall traps. The scydmaenine *Stenichnus collaris subseriatus* is recorded from Ireland for the first time.

Key words: Staphylinidae, Carabidae, *Molinia-Juncus acutiflorus*, habitat restoration, semi-natural grasslands, Kerry cattle, *Stenichnus collaris subseriatus*, first record.

Introduction

Extensively-grazed semi-natural grasslands are declining in Ireland and elsewhere due to the twin processes of agricultural intensification and abandonment of grazing (Bignall, 1998; Strijker, 2005; O'Neill *et al.*, 2013; Uchida and Ushimaru, 2014; Rüşüña *et al.*, 2024). While the impacts of abandonment of extensive grassland management on biodiversity are well known to be negative (e.g. on flowering herbs and their pollinators, on insolation-requiring insects like butterflies and solitary bees, on short-turf feeding birds such as chough), less is known concerning impacts on epigeal invertebrates. Here, the results of a survey of the staphylinid and carabid fauna of a restored *Molinia caerulea/Juncus acutiflorus* grassland plot on a gley soil in south Cork, are reported. The restoration from an ungrazed *Molinia caerulea/Rubus fruticosus*

vegetation (Plate 1) being invaded by young *Salix cinerea* and *Betula pubescens*, was carried out by the removal of the *Molinia* tussocks (Plate 2) and young tree saplings, and reinstatement of grazing by traditional Kerry and Shorthorn cattle breeds (Plate 3), and with very occasional cutting in September.

The aim of the survey was to provide a baseline, for this site, of species which are likely to prefer restored *Molinia-Juncus acutiflorus* habitat as opposed to abandoned dense *Molinia* and *Salix* carr. In addition, the survey provides data on the alpha-diversity of wet grassland staphylinid and carabid beetles in this type of habitat, and adds to the relatively poorly known staphylinid and carabid fauna of Co. Cork.

Methods

Study site

The surveyed site was an isolated *circa* 6.75ha area of wet woodland and wet grassland near Riverstick in south Co. Cork (see Good, 2001), and focussed on a 0.1ha plot in the townland of Boulaling (*Buaile Fhlainn*) (51.77939 latitude -8.483721 longitude) (Irish Grid Reference W666586), and nearby unrestored dense *Molinia* and *Salix* carr.

The restored plot was in an area of groundwater gley soil which supported *Molinia caerulea* – *Juncus acutiflorus* vegetation. Several attempts to partially drain this area, using clay pipes (19th century), and a deep main drain (1981), did not much affect the plot due to its location and the impermeable nature of the subsoil. In 1992, significant livestock grazing ceased in the plot, but was restored in 2004, followed by removal of *Molinia* tussocks and briars which had overgrown the area (Plate 1). The tussocks were removed by being pushed forward and up by a mini-excavator bucket (Plate 2), rather than being dug out, thereby minimising soil disturbance and colonisation by *Juncus effusus* rushes. The plot was subsequently grazed until 2019 by Kerry bullocks (Plate 3), a locally-adapted endangered breed of cattle (Browett *et al.*, 2018), accompanied by several Shorthorn suckler cows. The cattle grazed the wet grassland in the area as part of a wider 12ha range mostly including organically-managed pasture on podzolic soil (with *Agrostis stolonifera*, *Anthoxanthum odoratum*, *Holcus lanatus* and *Lotus pedunculatus* dominating), at a stocking rate of < 1.0 LU/ha. The greatest intensity of grazing in the plot occurred during the winter and spring, due to the abundance of preferred forage in the *Anthoxanthum-Agrostis* pasture later in the season. In occasional years when the soil was sufficiently dry in September, the plot was also topped to allow greater light penetration to the sward.

The vegetation (Table 9) was a mixture of *Juncus acutiflorus/articulatus* – *Holcus lanatus* grassland and *Molinia caerulea* – *Potentilla erecta* grassland (sensu O'Neill *et al.*, 2013; see also Blackstock *et al.*, 1998). For the purpose of this survey, three different restored areas were identified: (a) a sward characterized by frequent *Anthoxanthum odoratum*; (b) a flushed area

dominated by *Juncus acutiflorus*; and (c) a drier area characterized by frequent *Potentilla erecta* (see Table 9). In addition, two unrestored sites were sampled: (d) an adjacent area with dense *Molinia* tussocks, and briar adjacent to young *Salix cinerea* and *Betula pubescens*; and (e) an area of mature *Salix cinerea* carr circa 50m from the plot, with a shaded mossy groundlayer (Table 9).

Sampling methods

Each of the above five areas was sampled for Staphylinidae and Carabidae using two methods, pitfall traps and emergence traps. Four glass pitfall traps (with an inner diameter of 47mm) and 50% ethylene glycol preservative were set in each habitat category (from 2 May to 16 July 2020), ensuring that a lip of soil covered the glass rim. Two emergence traps (covering an area of circa 1m²) were operated in each habitat category from 2 May to 14 June 2020. The traps were made from malaise trap materials (including collecting bottle) (see Fig. 17 of Speight (2008)). One emergence trap was extensively torn (probably due to mammal activity) and had no sample (in the *Salix* carr, June 2020). However, as the data are not for quantitative comparison, this is less significant. Emergence traps were also used in autumn (11 August - 28 September) 2019.

Samples were also taken using an ‘S-vac’ suction sampler (a modified Stihl leaf-blower; see Good and Butler (2001)), with a circa 4m² sampled area for each sward type. Unfortunately, due to a failure of the engine, only samples from two of the sward types were taken.

Identification

Identification of Carabidae and Staphylinidae was undertaken using several works, but primarily Luff (2007), and Brundin (1942), Palm (1970), Lott and Anderson (2011) and Duff (2024), respectively. Nomenclature follows the checklist in Duff (2018), with two exceptions: (a) The Silphidae have recently been reclassified as a subfamily (Silphinae) of the Staphylinidae (Cai *et al.*, 2022), supported by strong evidence that they evolved from within the Staphylinidae (Sikes, Thayer and Newton, 2024), and this is followed here with the inclusion of two silphine species; (b) *Mocyta* and *Philhygra*, listed as subgenera of *Atheta* in Schülke and Smetana (2015) and Duff (2018), have been recently reinstated as a genus by Muona (2024), a position also taken by Lee and Ahn (2012) and Klimaszewski *et al.* (2021).

Results

In total, 85 species of staphylinid and 28 species of carabid were found in the Boulaling site (Tables 1-7). Of these 72 species of staphylinid and 21 species of carabid occurred in the restored plot, and 47 species of staphylinid and 22 species of carabid occurred in the unrestored dense *Molinia* and *Salix* carr. In the following paragraphs, the total in each category (restored swards (*Anthoxanthum* + flush + *Potentilla*) and unrestored habitat (dense *Molinia* + *Salix* carr) is given in parenthesis after each species (i.e. restored/unrestored); but bear in mind

that this is a 3/2 ratio of sampling effort.

Exceptionally high numbers of the large predatory species *Staphylinus dimidiaticornis* (222/2) were found in pitfall traps in the restored plot (Table 1). These data may be affected by trapping bias due to the greater ease of movement in open swards (see Heydemann, 1956; Thomas *et al.*, 2006), as well as possible attraction to the ethylene glycol preservative. However, the exceptionally high numbers are unlikely to be just due to such bias, and the species is likely to genuinely prefer grazed wet grassland. *S. dimidiaticornis* is not listed as a wetland species by Lott (2003), and has been recorded as abundant in hay meadows dominated by *Holcus lanatus* and *Festuca rubra* (Good and Giller, 1990), in swamp/fen and lakeshore carr (Anderson, 1997), in ungrazed lakeshore *Sesleria* grassland near alder/willow carr (Good and Dorman, 2020), as well as running on woodland paths (Horion, 1965). It is consequently unlikely to be extirpated by the abandonment of grazing at this site.

Rybaxis longicornis (43/0) is a wetland species, but there are conflicting descriptions of its habitat in the literature. Lott (2003) cites moss and tussocks in carr, and Jeannel (1950) also mentions soil under old willows, whereas Horion (1949) cites wet meadows under moss and leaves, as well as margins of pools and ditches. Koch (1989) mentions both wet meadows and alder carr, as well as, especially, in the reed-zone of silting-up lakes and backwaters. It was likewise found to be abundant in the *Phragmites* reed-bed margin of Kilkeran Lake, West Cork (Good and Butler, 2000; J.A. Good, unpublished data). The results here (Tables 1, 3 and 5) would support a preference for wet meadows, but, from the data in Lott (2003) and Jeannel (1950), it is also likely to survive in willow carr where grazing is abandoned.

Philonthus fumarius (22/2) is a wetland species and was recorded mostly in the flush (Tables 1 and 3). Horion (1965) and Koch (1989) mention its habitat in Central Europe to include alder carr, as well as marshes and muddy shores, but neither Lott (2003) nor Anderson (1997) mention carr, and they subsequently describe the species as frequent in nutrient-rich permanent mires (Lott and Anderson, 2011). Duff (2024) states it to be very local in Britain and Ireland apart from SE England.

Philonthus micantoides (29/4) was considered by Koch (1989) to be a stenotopic species of marshes and marshy and muddy shores of waterbodies, and by Lott (2003) and Lott and Anderson (2011) to occur in litter in fluctuating marsh. No records from carr were found in the literature.

Acupalpus dubius (85/10) was the only wetland carabid with distinctly higher numbers in the grazed plot (Tables 2, 4 and 6). For carabids, this may not be unexpected; in some other studies, species richness of carabid beetles did not show a clear response to the cessation of grazing (Meharg, 1988 (cited by McAdam and Montgomery (2000)); Pozsgai *et al.*, 2022). The higher numbers of *A. dubius* in the grazed plot would appear to be a genuine effect, as the description of the habitat of this species emphasises short turf and open margins of pools (Lindroth, 1992),

and Anderson *et al.* (2000) mention warm (more insulated) marshy sites near coastal areas.

Philhygra diversity

Eight species of the genus *Philhygra* were recorded from the Boulaling site (Tables 1, 3, 5 and 7), representing 57% of the native Irish fauna of this genus (cf. Good and Anderson, 2017). Of these, two species, *P. gyllenhalii* and *P. hygrobica*, were not recorded from the restored plot. The habitats of the eight *Philhygra* species, as they apply to the Boulaling site, are as follows (data from Brundin (1942) (B), Koch (1989) (K), Lott (2003) (L), Palm (1970) (P), and Regan and Anderson (2004) (RA)):

Philhygra debilis: Marshy sedge-meadows (B, P); wet meadows, alder carr (K); riparian litter (L); *P. elongatula*: Eurytopic in wet or partially wet soils (P); wet meadows and alder carr (K); riparian and marsh litter (L); *P. gyllenhalii*: wet meadowland, small carrs with *Carex* and *Sphagnum* (P); marshes and alder carr (K), “above all in *Carex* meadows” (B); carr and marsh litter (L); *P. hygrobica*: wet and marshy habitats (P, K), carr litter (L); *P. malleus*: marshy and muddy water-margins (K), riparian and marsh litter (L); *P. obtusangula*: Carr litter (L), forest ponds and marshy soils (B, K, P), shaded pool margins (K); *P. palustris*: muddy shores of streams, in compost and old hay (P), fields and gardens on clay-rich soils, gravel quarries (K); riparian (L, RA); *P. volans*: marshy water margins (K), marsh and riparian litter (L).

The high species diversity of *Philhygra* (eight species) in such a small isolated area of wet woodland and wet grassland (6.75ha) is, at first, surprising. For instance, the intensively worked much larger Wicken Fen site in Norfolk (U.K.) contained, by comparison, nine species (Friday and Harley, 2000). However, in a comprehensive survey of the syrphid fauna of the farm between 2000 and 2002, ten species of the genus *Platycheirus* were recorded from the same 6.75ha area (Speight and Good, 2002). This, similarly, represents 50% of the Irish fauna of this genus (cf. Speight, 2008). Both indicate a diversity of microhabitats at this site, although the reasons for the coexistence of *Philhygra* species remain to be elucidated.

Philhygra obtusangula was abundant in the emergence trap samples from the *Salix* carr (Table 3), but absent from the pitfall and emergence traps in grazed plot (although two individuals were recorded here by suction sampling). This finding is in line with its reported habitat preference for carr and wooded wetlands (see above). Although it is not mentioned as notable in Great Britain (Hyman and Parsons, 1994), Duff (2024) describes *P. obtusangula* as very local. It requires more sampling in *Salix* carr to establish its status in south-west Ireland.

Philhygra gyllenhalii was considered an indicator species of high quality habitat by Good and Butler (2001). *P. hygrobica*, in contrast, was considered to be a notable species by Hyman and Parsons (1994). However, while *P. hygrobica* was reported in three wetland sites by Regan and Anderson (2004), *P. gyllenhalii* was not found. Here, it was only recorded from the *Salix* carr in emergence traps (and was also found in numbers in emergence traps in the same carr location in 2002 (J. A. Good, unpublished data)).

Both *Philhygra debilis* and *P. palustris* appear to be local in both Great Britain and Ireland (Anderson, 1997; Regan and Anderson, 2004; Duff, 2024). However, *P. palustris* appears to be more eurytopic and not as restricted to wet meadows as *P. debilis*. *P. debilis*, being local and stenotopic, could be considered an indicator species for wet meadow habitat, but it was only represented by a single male, and given its recorded occurrence in alder carr, it could derive from this habitat (which is *circa* 100m from the sampled plot) or from nearby *Salix* carr.

Two *Philhygra* species, *elongatula* (n = 3) and *malleus* (n = 6) were only recorded from the grazed plot (Table 1, 3 and 5). They were by far the two most frequent species in wetland samples reported by Lott (2003), although *P. malleus* was also recorded frequently in swede fields in Norway (Andersen, 1985). It may be associated with the drained margins under *Salix* canopy more so than wet grassland.

Other species

Gabrius breviventer occurred in considerable numbers (n = 54) in emergence traps in the *Anthoxanthum* sward (Table 3), indicating breeding occurred in this habitat, and that the species is less tolerant of wetter soil conditions.

The wingless *Geostiba circellaris* occurred in numbers, but only in pitfall traps and not in emergence traps, indicating its reluctance to climb, at least during the sampled months. This observation may be relevant to interpreting its dispersal mechanism(s).

Pterostichus rhaeticus was abundant in the *Salix* carr (Tables 1 and 3), but its sibling species *P. nigrita* was also provisionally identified in the same area as *P. rhaeticus*. The determination is provisional as the only reliable character distinguishing these two species in the inflated endophallus, and inflation is not possible in samples preserved in alcohol (Anderson, 2002). However, the co-occurrence of both species has been reported from Cos Galway and Tyrone (Anderson, 2002; Regan and Anderson, 2004), so this provisional determination may be correct.

Stenichnus collaris subseriatus, recorded from the *Salix* carr (Table 1), has not apparently been previously recorded from Ireland (Duff, 2024). This is recently cited as a valid species (e.g. Duff, 2024), although it has not yet been formally described as such (Sapieja, 2022). It was determined using the aedeagal illustrations in Sapieja (2022) and Duff (2024).

Emergence traps

Eight species of Carabidae, and fifteen species of Staphylinidae, were recorded from emergence traps (May-July) (Tables 3 and 4) but not from pitfall traps (Tables 1 and 2), despite the sampling effort for the latter amounting to 320 trap-days. This demonstrates the value of small emergence traps as a supplement to pitfall traps. Nine species were only recorded from emergence traps operated in autumn (Tables 5 and 6). Regrettably, because of a machine fault, there was insufficient comparative data from the suction sampler. However, seven species of staphylinid were recorded only by this technique (Table 7), indicating that emergence traps are not a substitute for suction sampling.

Discussion

It was considered necessary to remove the *Molinia* tussocks because grazing intact *Molinia* alone was found to result in an insufficiently open sward. However, removal is likely to be a carbon-negative practice, because of the amount of carbon stored in the tussocks (Baggaley *et al.*, 2021). Nevertheless, restoration of even a small area of *Molinia-Juncus acutiflorus* wet grassland, and grazing by cattle, clearly benefitted the biodiversity of the farm, with the flourishing of plant species like *Dactylorhiza maculata* and *Scutellaria minor*. This was also shown by the high species diversity of both staphylinids and carabids recorded in the restored area, with species such as *Philonthus fumarius*, *P. micantoides* and *Acupalpus dubius* which may also be dependent on the open sward conditions. Speight (2008: 60) predicted two syrphid species, dependent on the wet grassland habitat, would be extirpated from the farm if this area remained disused in the long-term. For staphylinids and carabids, there may be further species in this category, if literature records of their occurrence in carr derive from beetles during the non-breeding part of their life cycle. Also, the south-facing flushes under *Salix* canopy, but adjacent to dense *Molinia* stands, may provide a more open habitat which is available now, but not in future decades during succession to tree cover. More data on the fauna of *Salix* carr microhabitats are clearly required to answer such questions.

Acknowledgements

This grazing trial arose out of a detailed entomological study of the farm by Dr Martin Speight (then of the National Parks & Wildlife Service (NPWS)), and we are particularly grateful for his encouragement to initiate this study. We are most grateful to John Daly and Udo Straub for many assistances with the Kerry cattle, to Pat Foley (NPWS), and also to Ken Bond for translations of Horion (1965).

References

- Andersen, A. (1985) Carabidae and Staphylinidae (Col.) in swede and carrot fields in northern and south-western Norway. *Fauna Norvegica* (Ser. B) **32**: 12-27.
- Anderson, R. (1997) Species inventory for Northern Ireland: Rove beetles (Coleoptera: Staphylinidae). *Environment and Heritage Service Research and Development Series No. 97/11*: 1-78.
- Anderson, R. (2002) The *ruffifemoratus* trait found in Irish *Pterostichus rhaeticus* Heer. *Coleopterist* **11**: 73-74.
- Anderson, R., McFerran, D. and Cameron, A. (2000) *The ground beetles of Northern Ireland (Coleoptera – Carabidae)*. Ulster Museum, Belfast.
- Baggaley, N. J., Britton, A. J., Barnes, A., Buckingham, S., Holland, J. P., Lilly, A., Pakeman, R. J., Rees, R. M., Taylor, A. and Yeluripati, J. (2021) *Understanding carbon*

- sequestration in upland habitats*. Edinburgh Climate Change Institute, Edinburgh.
- Bignall, E. M. (1998) Using an ecological understanding of farmland to reconcile nature conservation requirements, EU agriculture policy and world trade agreements. *Journal of Applied Ecology* **35**: 949-954.
- Blackstock, T. H., Stevens, D. P., Stevens, P. A., Mockridge, C. P. and Yeo, M. J. M. (1998) Edaphic relationships among *Cirsio-Molinietum* and related wet grassland communities in lowland Wales. *Journal of Vegetation Science* **9**: 431-444.
- Browett, S., McHugo, G., Richardson, I. W., Magee, D. A., Park, S. D. E., Fahey, A. G., Kearney, J. F., Correia, C. N., Randawa, I. A. S., and MacHugh, D. E. (2018) Genomic characterisation of the indigenous Irish Kerry cattle breed. *Frontiers in Genetics* **9**(51): 1-17.
- Brundin, L. (1942) Monographie der palaearktischen Arten der *Atheta*-Untergattung *Hygroecia* (Coleoptera, Staphylinidae). *Annalen der Naturhistorischen Museums in Wien* **53**: 129-298.
- Cai, C., Tihekla, E., Giacomelli, M., Lawrence, J. F., Ślipiński, A., Kundrata, R., Yamamoto, S., Thayer, M., Newton, A. F., Leschen, R. A. B., Gimmel, M. L., Lü, L., Engel, M. S., Bouchard, P., Huang, D., Pisani, D. and Donoghue, P. C. J. (2022) Integrated phylogenomics and fossil data illuminate the evolution of beetles. *Royal Society Open Science* **9**: 211771. <<https://doi.org/10.1098/rsos.211771>>
- Duff, A. G. (ed.) (2018) *Checklist of beetles of the British Isles*. Pemberley Books, Iver, UK.
- Duff, A. G. (2024) *Beetles of Britain and Ireland. 2. Staphylinidae*. A.G. Duff, West Runton, Norfolk, UK.
- Friday, L. and Harley, B. (2000) *Checklist of the flora and fauna of Wicken Fen*. Harley Books, Colchester, UK.
- Good, J. A. (2001) Farms as biogeographical units: 1. Habitats and faunal changes as influenced by farmer decision-making on a mixed farm in south Cork, Ireland. *Bulletin of the Irish Biogeographical Society* **25**: 220-247.
- Good, J. A. and Anderson, R. (2017) Additions, deletions and corrections to the Staphylinidae in the Irish Coleoptera Annotated List, with a revised check-list of Irish species. *Bulletin of the Irish Biogeographical Society* **41**: 178-234.
- Good, J. A. and Butler, F. T. (2000) Coastal lagoon and saline lake shores as a habitat for Staphylinidae, Carabidae and Pselaphidae (Coleoptera) in Ireland. *Bulletin of the Irish Biogeographical Society* **24**: 111-141.
- Good, J. A. and Butler, F. T. (2001) Turlough pastures as a habitat for Staphylinidae and Carabidae (Coleoptera) in south-east Galway and North Clare, Ireland. *Bulletin of the Irish Biogeographical Society* **25**: 74-94.
- Good, J. A. and Dorman, J. A. (2020) Relative abundance of rove-beetles (Coleoptera:

- Staphylinidae) from grasslands and pastures in Ireland and Galicia, Spain. *Bulletin of the Irish Biogeographical Society* **44**: 205-235.
- Good, J. A. and Giller (1990) Staphylinid beetles (Coleoptera) from cereal and grass fields in south-west Ireland. *Bulletin of the Irish Biogeographical Society* **13**: 2-22.
- Heydemann, B. (1956) Die Biotopstruktur als Raumwiderstand und Raumfülle für die Tierwelt. *Verhandlungen der Deutschen Zoologischen Gesellschaft* **50**: 332-347.
- Horion, A. D. (1949) *Faunistik der Mitteleuropäischen Käfer. II. Palpicornia -Staphylinidea (ausser Staphylinidae)*. Vittorio Klostermann, Frankfurt am Main.
- Horion, A. D. (1965) *Faunistik der Mitteleuropäischen Käfer. X. Staphylinidae 2. Paederinae bis Staphylinidae*. Feyel, Überlingen -Bodensee.
- Hyman, P. S. and Parsons, M. S. (1994) *A review of the scarce and threatened Coleoptera of Great Britain. Part 2*. JNCC, Peterborough, UK.
- Jeannel, R. (1950) Coléoptères Psélaphides. *Faune de France* **53**: 1-421.
- Klimaszewski, J., Brunke, A. J., Sikes, D. and Pentisaari, M. (2021) Tribe Athetini Casey, 1910. Pp. 371-643. In Klimaszewski, J. et al. *A faunal review of aleocharine beetles in the rapidly changing Arctic and Subarctic regions of North America (Coleoptera, Staphylinidae)*. Springer, Cham, Switzerland.
- Koch, K. (1989) *Die Käfer Mitteleuropas, Ökologie 1*. Goecke and Evers, Krefeld.
- Lee, S.-G. and Ahn, K.-J. (2012) A taxonomic review of Korean species of the genus *Philhygra* Mulsant & Rey (Coleoptera: Staphylinidae: Aleocharinae). *Zootaxa* **3483**: 58-70.
- Lindroth, C. H. (1992) *Ground beetles (Carabidae) of Fennoscandia: a zoogeographic study. 1. Specific knowledge regarding the species*. Intercept, Andover, UK.
- Lott, D. A. (2003) An annotated list of wetland ground beetles (Carabidae) and rove beetles (Staphylinidae) found in the British Isles including a literature review of their ecology. *English Nature Research Reports* **No. 488**: 1-85.
- Lott, D. A. and Anderson, R. (2011) The Staphylinidae (rove beetles) of Britain and Ireland. Parts 7 & 8: Oxyporinae, Steninae, Euaesthetinae, Pseudopsinae, Paederinae, Staphylinidae. *Handbooks for the Identification of British Insects* **12**(7): 1-340.
- Luff, M. L. (2007) The Carabidae (ground beetles) of Britain and Ireland. *Handbooks for the Identification of British Insects* **4**(2): 1-247. 2nd edition.
- McAdam, J. H. and Montgomery, W. I. (2000) The impact of land use changes and management on ground beetle community structure and diversity – a review of recent research. Pp 173-210. In Anderson, R., McFerran, D. and Cameron, A. (eds) *The ground beetles of Northern Ireland (Coleoptera – Carabidae)*. Ulster Museum, Belfast.
- Meharg, M. J. (1988) *Changing management and the ecology of uplands in Northern Ireland*. Unpublished Ph.D. thesis, The Queen's University of Belfast (cited by McAdam and Montgomery, 2000).

- Muona, J. (2024) The limits of the genus *Atheta* Thomson and its allies (Coleoptera, Staphylinidae, Aleocharinae, Athetini). *Entomologische Blätter für Biologie und Systematik der Käfer* **119**: 95-146.
- O'Neill, F. H., Martin, J. R., Devaney, F. M. and Perrin, P. M. (2013) The Irish semi-natural grasslands survey 2007-2012. *Irish Wildlife Manuals* **No. 78**. National Parks & Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin.
- Palm, T. (1970) Skalbaggar. Coleoptera. Kortvingar: Fam.: Staphylinidae. Underfam. Aleocharinae (Atheta). *Svensk Insektfauna* **No. 52**: 1-296.
- Pozsgai, G., Quinzo-Ortega, L. and Littlewood, N. A. (2022) Grazing impacts on ground beetle (Coleoptera: Carabidae) abundance and diversity on semi-natural grassland. *Insect Conservation and Diversity* **15**: 36-47.
- Regan, E. and Anderson, R. (2004) Terrestrial Coleoptera recorded in Ireland, May 2003. *Bulletin of the Irish Biogeographical Society* **28**: 85-132.
- Rūsiņa, S., Lakovskis, P. and Ieviņa, L. (2024) Semi-natural grassland abandonment in relation to agricultural land management under Common Agricultural Policy in boreonemoral Europe. *Agronomy Research* **22**: 253-273.
- Sapieja, M. (2022) *Stenichnus collaris substriatus* Franz, 1960 (Coleoptera: Staphylinidae: Scydmaeninae), a new ant-like stone beetle in the fauna of Poland, with comments on its systematic position. *Wiadomości Entomologiczne* **41**: 26-29.
- Schülke, M. and Smetana, A. (2015) Staphylinidae. Pp 304-1134. In Löbl, I. and Löbl, D. (eds) *Catalogue of Palaearctic Coleoptera. 2. Hydrophiloidea – Staphylinoidea*. 2nd edition. Brill, Leiden.
- Sikes, D. S., Thayer, M. K. and Newton, A. F. (2024) Large carrion and burying beetles evolved from Staphylinidae (Coleoptera, Staphylinidae, Silphinae): a review of the evidence. *ZooKeys* **1200**: 159-182.
- Speight, M. C. D. (2008) Database of Irish Syrphidae (Diptera). *Irish Wildlife Manuals* **No. 36**. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin. Pp. 1-338.
- Speight, M. C. D. and Good, J. A. (2002) Predicting the changes in farm syrphid faunas that could be caused by changes in farm management regimes (Diptera, Syrphidae). *Volucella* **6**: 125-137.
- Stace, C. A. and Thomson, H. (2019) *New flora of the British Isles*. C. & M. Floristics, Essex, UK.
- Strijker, D. (2005) Marginal lands in Europe - causes of decline. *Basic and Applied Ecology* **6**: 99-106.
- Thomas, C. F. G., Brown, N. J. and Kendall, D. A. (2006) Carabid movement and vegetation density: Implications for interpreting pitfall trap data from split-field trials. *Agriculture*,

Ecosystems and Environment **113**: 51-61.

Uchida, K. and Ushimaru, A. (2014) Biodiversity declines due to abandonment and intensification of agricultural lands: patterns and mechanisms. *Ecological Monographs* **84**: 637-658.

TABLE 1. Adult Staphylinidae from pitfall traps (May - July 2020) from a restored wet meadow (flush, *Anthoxanthum* sward and *Potentilla* sward), and unrestored adjacent habitats (dense *Molinia* tussocks and *Salix* carr).

<i>Species</i>	<i>Restored</i>			<i>Unrestored</i>	
	<i>Flush</i>	<i>Anth.</i>	<i>Pot.</i>	<i>Molin.</i>	<i>Salix</i>
<i>Aloconota gregaria</i> (Erichson)	1	-	2	-	-
<i>Amischa analis</i> (Gravenhorst)	-	-	-	1	-
<i>Anotylus rugosus</i> (Fabricius)	24	28	1	31	1
<i>Astenus lyonesius</i> (Joy)	-	2	-	-	-
<i>Brachygluta fossulata</i> (Reichenbach)	-	1	-	-	-
<i>Bryaxis bulbifer</i> (Reichenbach)	-	-	2	-	1
<i>Bryaxis puncticollis</i> (Denny) ♂	-	1	-	-	-
<i>Calodera aethiops</i> (Gravenhorst)	1	-	2	-	-
<i>Callicerus obscurus</i> Gravenhorst	-	-	-	1	-
<i>Carpelimus corticinus</i> (Gravenhorst)	5	7	5	11	-
<i>Euconnus hirticollis</i> (Illiger)	3	3	-	2	-
<i>Gabrius breviventer</i> (Sperk)	1	5	2	-	-
<i>Geostiba circellaris</i> (Gravenhorst)	2	1	6	8	5
<i>Gyrophypus angustatus</i> Stephens	-	1	-	-	-
<i>Habrocerus capillaricornis</i> (Gravenhorst)	-	-	-	-	1
<i>Ischnosoma splendidum</i> (Gravenhorst)	-	2	1	1	3
<i>Lathrobium brunnipes</i> (Fabricius)	2	1	-	1	2
<i>Lesteva sicula heeri</i> Fauvel	-	-	-	5	-
<i>Liogluta microptera</i> Thomson	-	-	-	17	-
<i>Mocytta amplicollis</i> (Mulsant & Rey) ♂♂♀	-	6	-	-	-
<i>Mocytta fungi</i> (Gravenhorst)	2	3	-	3	-
<i>Myllaena brevicornis</i> (Matthews)	-	-	1	3	-
<i>Ocypus aeneocephalus</i> (DeGeer)	-	-	1	-	-
<i>Oxyopoda elongatula</i> Aubé	-	-	1	-	1
<i>Philhygra elongatula</i> (Gravenhorst)	-	1	-	-	-
<i>Philhygra hygrobia</i> (Thomson)	-	-	-	-	1
<i>Philhygra malleus</i> Joy	3	-	-	-	-
<i>Philhygra obtusangula</i> Joy	-	-	-	-	4
<i>Philhygra volans</i> (Scriba)	1	-	-	1	-
<i>Philonthus carbonarius</i> (Gravenhorst)	-	-	1	-	-
<i>Philonthus cognatus</i> Stephens	-	-	1	-	-

TABLE 1 (Continued).

<i>Species</i>	<i>Restored</i>			<i>Unrestored</i>	
	<i>Flush</i>	<i>Anth.</i>	<i>Pot.</i>	<i>Molin.</i>	<i>Salix</i>
<i>Philonthus fumarius</i> (Gravenhorst)	9	-	-	-	1
<i>Philonthus micantoides</i> Benick & Lohse	1	1	-	-	-
<i>Philonthus nigrata</i> (Gravenhorst)	1	-	-	-	-
<i>Phosphuga atrata</i> (Linnaeus)	-	-	-	1	-
<i>Pselaphus heisei</i> Herbst	-	-	3	-	-
<i>Quedius curtipennis</i> Bernhauer	-	-	4	-	2
<i>Quedius fuliginosus</i> (Gravenhorst)	3	-	1	-	-
<i>Quedius fumatus</i> (Stephens)	-	-	-	-	1
<i>Quedius semiobscurus</i> (Marsham)	-	1	-	-	-
<i>Reichenbachia juncorum</i> (Leach)	-	-	9	-	-
<i>Rugilus erichsoni</i> (Fauvel)	-	15	5	-	-
<i>Rybaxis longicornis</i> (Leach)	2	27	9	-	-
<i>Sepedophilus marshami</i> (Stephens)	-	1	-	3	-
<i>Sepedophilus nigripennis</i> (Stephens)	1	3	1	1	-
<i>Staphylinus dimidiaticornis</i> Gemminger	17	99	104	1	1
<i>Stenichnus collaris subseriatus</i> Franz	-	-	-	-	2
<i>Stenus bimaculatus</i> Gyllenhal	2	2	1	12	6
<i>Stenus brunnipes</i> Stephens	-	1	2	-	-
<i>Stenus fulvicornis</i> Stephens	-	4	1	1	-
<i>Stenus junco</i> (Paykull)	3	-	-	1	1
<i>Tachinus rufipes</i> (Linnaeus)	6	5	-	27	-
<i>Tachyporus dispar</i> (Paykull)	-	5	2	-	-
<i>Xantholinus longiventris</i> Heer	-	9	3	-	-

TABLE 2. Adult Carabidae from pitfall traps (May - July 2020) from a restored wet meadow (flush, *Anthoxanthum* sward and *Potentilla* sward), and unrestored adjacent habitats (dense *Molinia* tussocks and *Salix* carr).

<i>Species</i>	<i>Restored</i>			<i>Unrestored</i>	
	<i>Flush</i>	<i>Anth.</i>	<i>Pot.</i>	<i>Molin.</i>	<i>Salix</i>
<i>Abax parallelepipedus</i> (Piller & Mitterpacher)	-	-	-	-	9
<i>Acupalpus dubius</i> Schilsky	2	4	21	2	-
<i>Agonum emarginatum</i> (Gyllenhal)	-	-	-	-	1
<i>Agonum gracile</i> Sturm	1	-	-	-	1
<i>Anchomenus dorsalis</i> (Pontoppidan)	-	1	-	-	-
<i>Bembidon lampros</i> (Herbst)	2	6	-	1	-
<i>Bembidion mannerheimi</i> Sahlberg	42	78	52	62	29
<i>Carabus granulatus</i> Linnaeus	5	-	1	2	1
<i>Demetrias atricapillus</i> (Linnaeus)	1	1	-	-	-

TABLE 2 (Continued).

<i>Species</i>	<i>Restored</i>			<i>Unrestored</i>	
	<i>Flush</i>	<i>Anth.</i>	<i>Pot.</i>	<i>Molin.</i>	<i>Salix</i>
<i>Nebria brevicollis</i> (Fabricius)	-	-	-	-	2
<i>Oxytelus obscurus</i> (Herbst)	-	-	-	-	2
<i>Poecilus versicolor</i> (Sturm)	-	-	1	-	-
<i>Pterostichus diligens</i> (Sturm)	2	1	-	1	-
<i>Pterostichus minor</i> (Gyllenhal)	5	-	-	-	4
<i>Pterostichus ?-nigrita</i> (Paykull)	-	-	1	-	2
<i>Pterostichus rhaeticus</i> Heer	4	-	-	-	25
<i>Pterostichus strenuus</i> (Panzer)	1	3	-	2	1
<i>Pterostichus vernalis</i> (Panzer)	-	-	1	-	-
<i>Trechus quadristriatus</i> (Schrank)	-	1	-	1	-

TABLE 3. Adult Staphylinidae from emergence traps (May - June 2020) from a restored wet meadow (flush, *Anthoxanthum* sward and *Potentilla* sward), and unrestored adjacent habitats (dense *Molinia* tussocks and *Salix* carr). Species not recorded in pitfall traps (Table 1) are marked with an asterisk.

<i>Species</i>	<i>Restored</i>			<i>Unrestored</i>	
	<i>Flush</i>	<i>Anth.</i>	<i>Pot.</i>	<i>Molin.</i>	<i>Salix</i>
<i>Aloconota gregaria</i> (Erichson)	-	1	-	-	2
<i>Amischa analis</i> (Gravenhorst)	-	2	2	-	1
* <i>Amischa decipiens</i> (Sharp)	-	1	2	-	-
* <i>Amischa nigrofusca</i> (Stephens)	-	-	1	-	-
<i>Anotylus rugosus</i> (Fabricius)	-	-	1	-	-
<i>Astenus lyonesius</i> (Joy)	1	-	-	-	-
* <i>Atheta nigripes</i> (Thomson)	-	-	1	-	-
<i>Calodera aethiops</i> (Gravenhorst)	-	-	-	2	2
<i>Carpelimus corticinus</i> (Gravenhorst)	-	1	6	-	-
* <i>Dinaraea angustula</i> (Gyllenhal)	-	-	1	-	-
* <i>Fagniezia impressa</i> (Panzer) ♀	-	-	1	-	-
<i>Gabrieus breviventer</i> (Sperk)	2	54	5	1	-
<i>Mocyta amplicollis</i> (Mulsant & Rey)	-	-	-	1	-
<i>Mocyta fungi</i> (Gravenhorst)	-	-	-	1	3
* <i>Nicrophorus vespilloides</i> Herbst	-	-	-	1	-
<i>Oxyptera elongatula</i> Aubé	1	-	1	1	-
* <i>Philhygra debilis</i> (Erichson)	-	-	1	-	-
<i>Philhygra elongatula</i> (Gravenhorst)	-	2	-	-	-
* <i>Philhygra gyllenhalii</i> (Thomson)	-	-	-	-	6
<i>Philhygra hygrobica</i> (Thomson)	-	-	-	-	3
<i>Philhygra malleus</i> Joy	1	-	2	-	-
<i>Philhygra obtusangula</i> Joy	-	-	-	-	24
<i>Philhygra volans</i> (Scriba)	7	2	-	-	3
<i>Philonthus cognatus</i> Stephens	-	-	2	-	-

TABLE 3 (Continued).

<i>Species</i>	<i>Restored</i>			<i>Unrestored</i>	
	<i>Flush</i>	<i>Anth.</i>	<i>Pot.</i>	<i>Molin.</i>	<i>Salix</i>
<i>Philonthus fumarius</i> (Gravenhorst)	5	1	6	-	-
<i>Philonthus micantoides</i> Benick & Lohse	4	-	22	-	3
<i>Philonthus nigrata</i> (Gravenhorst)	1	-	-	-	-
<i>Phosphuga atrata</i> (Linnaeus)	-	-	-	1	-
<i>Rybaxis longicornis</i> (Leach)	-	-	5	-	-
* <i>Sepedophilus littoreus</i> (Linnaeus)	-	-	1	-	-
<i>Stenus bimaculatus</i> Gyllenhal	-	-	-	-	1
<i>Stenus fulvicornis</i> Stephens	-	4	2	1	1
* <i>Stenus picipes</i> Stephens	1	-	-	-	-
* <i>Stenus nanus</i> Stephens	-	1	-	-	-
* <i>Tachyporus chrysomelinus</i> (Linnaeus)	-	2	1	10	2
<i>Tachyporus dispar</i> (Paykull)	-	-	1	-	-
* <i>Tachyporus hypnorum</i> (Fabricius)	-	1	-	-	-
* <i>Tachyporus nitidulus</i> (Fabricius)	-	-	-	1	-
* <i>Tachyporus pusillus</i> Gravenhorst	-	-	-	-	1

TABLE 4. Adult Carabidae from emergence traps (May - June 2020) from a restored wet meadow (flush, *Anthoxanthum* sward and *Potentilla* sward), and unrestored adjacent habitats (dense *Molinia* tussocks and *Salix* carr). Species not recorded in pitfall traps (Table 2) are marked with an asterisk.

<i>Species</i>	<i>Restored</i>			<i>Unrestored</i>	
	<i>Flush</i>	<i>Anth.</i>	<i>Pot.</i>	<i>Molin.</i>	<i>Salix</i>
<i>Acupalpus dubius</i> Schilsky	1	6	50	8	-
<i>Agonum emarginatum</i> (Gyllenhal)	1	-	-	-	1
* <i>Amara familiaris</i> (Duftschmid)	-	-	-	-	2
* <i>Amara lunicollis</i> Schiødte	-	-	-	1	-
* <i>Amara plebeja</i> (Gyllenhal)	-	-	-	1	1
<i>Bembidon lampros</i> (Herbst)	-	-	-	-	1
<i>Carabus granulatus</i> Linnaeus	-	-	1	-	-
<i>Demetrias atricapillus</i> (Linnaeus)	-	-	-	1	-
* <i>Leistus fulvibarbis</i> Dejean	-	-	-	-	2
* <i>Loricera pilicornis</i> (Fabricius)	-	-	-	-	2
* <i>Notiophilus biguttatus</i> (Fabricius)	-	1	-	-	-
* <i>Paradromius linearis</i> (Olivier)	1	1	-	1	-
<i>Pterostichus rhaeticus</i> Heer	-	-	-	-	2
<i>Trechus quadristriatus</i> (Schrank)	-	-	-	-	1

TABLE 5. Adult Staphylinidae from emergence traps (August - September 2019) from a restored wet meadow (flush, *Anthoxanthum* sward and *Potentilla* sward), and unrestored adjacent habitat (dense *Molinia* tussocks). Species not recorded in 2020 are marked with an asterisk.

<i>Species</i>	<i>Restored</i>			<i>Unrestored</i>
	<i>Flush</i>	<i>Anth.</i>	<i>Pot.</i>	<i>Molin.</i>
* <i>Aleochara lanuginosa</i> Gravenhorst	-	-	-	2
<i>Amischa analis</i> (Gravenhorst)	1	2	2	2
* <i>Amischa bifoveolata</i> (Mannerheim)	-	-	2	-
<i>Amischa decipiens</i> (Sharp)	1	-	-	-
* <i>Amischa</i> sp.	-	1	-	-
<i>Anotylus rugosus</i> (Fabricius)	1	-	-	-
<i>Astenus lyonessius</i> (Joy)	-	-	-	1
* <i>Dalotia coriaria</i> (Kraatz)	3	-	-	-
<i>Calodera aethiops</i> (Gravenhorst)	1	-	-	-
<i>Carpelimus corticinus</i> (Gravenhorst)	1	-	-	-
<i>Gabrius breviventer</i> (Sperk)	3	-	-	-
* <i>Gyrophæna</i> sp. ♀	2	-	-	-
* <i>Lathrobium elongatum</i> (Linnaeus)	1	-	-	-
<i>Mocyta amplicollis</i> (Mulsant & Rey) ♀	1	1	-	-
<i>Mocyta fungi</i> (Gravenhorst)	1	-	-	1
* <i>Oxypoda brevicornis</i> (Stephens)	1	-	-	-
* <i>Philhygra palustris</i> (Kiesenwetter) ♂	-	-	1	1
<i>Philonthus carbonarius</i> (Gravenhorst)	1	-	2	1
<i>Philonthus cognatus</i> Stephens	1	3	4	1
<i>Philonthus fumarius</i> (Gravenhorst)	1	-	-	1
<i>Philonthus micantoides</i> Benick & Lohse	4	-	1	-
* <i>Quedius levicollis</i> (Brullé)	-	-	-	1
<i>Sepedophilus nigripennis</i> (Stephens)	-	-	1	1
<i>Staphylinus dimidiaticornis</i> Gemminger	-	2	-	-
<i>Stenus junco</i> (Paykull)	-	-	-	1
<i>Tachyporus chrysomelinus</i> (Linnaeus)	-	1	1	2
<i>Tachyporus hypnorum</i> (Fabricius)	1	1	-	-

TABLE 6. Adult Carabidae from emergence traps (August - September 2019) from a restored wet meadow (flush, *Anthoxanthum* sward and *Potentilla* sward), and unrestored adjacent habitat (dense *Molinia* tussocks). Species not recorded in 2020 are marked with an asterisk.

<i>Species</i>	<i>Restored</i>			<i>Unrestored</i>
	<i>Flush</i>	<i>Anth.</i>	<i>Pot.</i>	<i>Molin.</i>
<i>Acupalpus dubius</i> Schilsky	1	-	-	-
<i>Amara familiaris</i> (Duftschmid)	1	-	-	-
* <i>Bembidion aeneum</i> Germar	1	-	-	-
<i>Bembidion mannerheimi</i> Sahlberg	1	-	-	-
<i>Trechus quadristriatus</i> (Schrank)	-	1	1	1

TABLE 7. Adult Staphylinidae from S-vac suction samples (*circa* 4m²; 10 July 2020) from restored wet meadow: ‘Flush’ - *Juncus acutiflorus* flush; ‘Anth.’ - *Anthoxanthum odoratum* sward. Species not recorded in pitfall or emergence traps (Table 1) are marked with an asterisk.

<i>Species</i>	<i>Flush</i>	<i>Anth.</i>
<i>Amischa analis</i> (Gravenhorst)	-	2
<i>Amischa nigrofusca</i> (Stephens)	2	-
<i>Astenus lyonessius</i> (Joy)	1	3
<i>Bryaxis bulbifer</i> (Reichenbach)	2	1
<i>Carpelimus corticinus</i> (Gravenhorst)	1	1
<i>Euconnus hirticollis</i> (Illiger)	1	-
* <i>Eusphalerum luteum</i> (Marsham)	-	1
<i>Gabrius breviventer</i> (Sperk)	1	4
<i>Mocyta ampicollis</i> (Mulsant & Rey)	-	4
<i>Mocyta fungi</i> (Gravenhorst)	4	2
* <i>Omalium excavatum</i> Stephens	-	1
<i>Philhygra obtusangula</i> Joy	2	-
<i>Reichenbachia juncorum</i> (Leach)	1	2
<i>Rugilus erichsoni</i> (Fauvel)	1	-
<i>Rybaxis longicornis</i> (Leach)	16	17
<i>Sepedophilus nigripennis</i> (Stephens)	3	5
<i>Stenus bimaculatus</i> Gyllenhal	-	1
<i>Stenus brunnipes</i> Stephens	-	2
* <i>Stenus flavipes</i> Stephens	-	5
<i>Stenus fulvicornis</i> Stephens	4	6
* <i>Stenus impressus</i> Germar	-	1
<i>Stenus juno</i> (Paykull)	-	2
* <i>Stenus nitidiusculus</i> Stephens	6	1
* <i>Stenus similis</i> (Herbst)	-	1
<i>Tachyporus dispar</i> (Paykull)	-	2
<i>Tachyporus pusillus</i> Gravenhorst	-	1
* <i>Tachyporus solutus</i> Erichson	-	1

TABLE 8. Adult Carabidae from S-vac suction samples (*circa* 4m²; 10 July 2020) from restored wet meadow: ‘Flush’ - *Juncus acutiflorus* flush; ‘Anth.’ - *Anthoxanthum odoratum* sward. Species not recorded in pitfall or emergence traps (Table 1) are marked with an asterisk.

<i>Species</i>	<i>Flush</i>	<i>Anth.</i>
<i>Acupalpus dubius</i> Schilsky	5	2
<i>Bembidon lampros</i> (Herbst)	1	1
<i>Bembidon mannerheimi</i> Sahlberg	4	5
<i>Demetrias atricapillus</i> (Linnaeus)	1	4

TABLE 9. Vegetation of the restored wet grassland plot and adjacent unrestored habitats at Boulaling. Nomenclature follows Stace and Thomson (2019) and Smith (2004) (not all mosses were determined).

‘Anthoxanthum sward’: Frequent: *Anthoxanthum odoratum*, *Filipendula ulmaria*, *Juncus acutiflorus*, *Molinia caerulea*, *Plantago lanceolata*, *Valeriana officinalis*. Present: *Agrostis canina*, *Cardamine palustris*, *Carex nigra*, *Carex pulicaris*, *Carex viridis*, *Cirsium palustris*, *Dactylorhiza maculata*, *Eupatorium cannabinum*, *Galium palustre*, *Holcus lanatus*, *Jacobaea aquatica*, *Lathyrus pratensis*, *Lotus uliginosus*, *Potentilla erecta*, *Ranunculus acris*, *R. flammula*, *R. repens*, *Stachys palustris*, *Taraxacum officinale*, *Vicia cracca*.

‘Flush’: Dominant species: *Juncus acutiflorus*, *Mentha aquatica*. Frequent/present: *Agrostis canina*, *Carex nigra*, *Galium palustre*, *Holcus lanatus*, *Juncus effusus*, *Lotus uliginosus*, *Pseudoscleropodium purum*, *Ranunculus flammula*, *Senecio palustris*, *Sphagnum denticulatum*.

‘Potentilla sward’: Frequent species : *Juncus acutiflorus*, *Molinia caerulea*, *Potentilla erecta*. Frequent (in patches)/present: *Agrostis capillaris*, *Anthoxanthum odoratum*, *Betula pubescens* (seedling), *Carex nigra*, *Cirsium palustre*, *Dactylorhiza maculata*, *Festuca rubra*, *Holcus lanatus*, *Jacobaea aquatica*, *Lotus uliginosus*, *Luzula multiflora*, *Pedicularis sylvatica*, *Pseudoscleropodium purum*, *Rhytidiadelphus squarrosus*, *Salix cinerea* (seedling), *Scutellaria minor*, *Sphagnum denticulatum*.

‘Dense Molinia tussocks’: Dominant species: *Molinia caerulea* (tussocks), *Rubus fruticosus* agg. Frequent/present: *Deschampsia caespitosa*, *Dryopteris dilatata*, *Filipendula ulmaria*, *Juncus acutiflorus*, *Juncus conglomeratus*, *Salix cinerea* (sapling), *Stachys palustris*.

Salix carr: Dominant: closed-canopy mature *Salix cinerea* *oleifolia* with *Kindbergia praelonga* in ground layer. Frequent/present: *Blechnum spicant*, *Carex remota*, *Cirsium palustre*, *Deschampsia caespitosa*, *Galium palustre*, *Hedera helix*, *Jacobaea aquatica*, *Juncus effusus* (very sparse plants), *Lonicera periclymenum*, *Ranunculus repens*, *Rubus fruticosus* agg.



PLATE 1. Ungrazed *Molinia* and *Rubus* prior to restoration.



PLATE 2. Example of ground surface after removal of *Molinia* tussocks by pushing the tussocks out with an excavator bucket, and removing them off the plot.



PLATE 3. Two of the Kerry bullocks used in the grazing trial.

FIRST RECORDS OF *CORYNONEURA LOBATA* EDWARDS, 1924 AND *MICROPSECTRA LINDROTHI* GOETGHEBUER, 1931 IN COUNTY KILDARE AND OF *CRICOTOPUS SYLVESTRIS* (FABRICIUS, 1794) IN HYDROMETRIC AREA 8, IRELAND (INSECTA: DIPTERA, CHIRONOMIDAE)

Declan A. Murray

Emeritus Associate Professor, Freshwater Biodiversity Ecology and Fisheries Research Group, School of Biology and Environmental Science, University College Dublin, Dublin 4, Ireland.
e-mail: <declan.murray@ucd.ie>

(Address for correspondence: Meadesbrook, Ashbourne, Co. Meath, A84 K727, Ireland)

Abstract

In Ireland, two species of Chironomidae (Insecta, Diptera), *Corynoneura lobata* Edwards, 1924 (Subfamily Orthocladiinae) and *Micropsectra lindrothi* Goetghebuer, 1931 (Subfamily Chironominae, Tribe Tanytarsini) are reported as new in County Kildare and the first record of *Cricotopus (Isocladius) sylvestris* (Fabricius 1794) is reported from Hydrometric Area 8.

Key words: Chironomidae, Diptera, distribution, Ireland.

Introduction

As of May 2025 the author's personal database has almost 23,000 entries for 545 species level taxa of Chironomidae in Ireland - 522 identified as named species and 23 taxa entries as distinct pupal morphotypes. Recent collections of Chironomidae (Diptera) yielded new distribution data for three species. *Cricotopus (Isocladius) sylvestris* (Fabricius 1794), already known from County Meath in Hydrometric Area (HA) 7 (Murray *et al.*, 2014), is reported as new in HA 8. (see <www.epa.ie> for details of HAs in Ireland). *Corynoneura lobata* Edwards, 1924 and *Micropsectra lindrothi* Goetghebuer, 1931, already on record in HA9, are reported for the first time from County Kildare.

In County Meath, some 214 species are documented from 65 locations in HAs 6, 7 and 8. Until 2018, there were 85 species documented in HA8 (Murray *et al.*, 2018). A further five species were subsequently added by Murray (2023). The new record presented here brings to 91 the number of species thus far known from HA8.

Records of 69 species of Chironomidae were reported from 12 locations in County Kildare (Murray *et al.*, 2013, 2014, 2015, 2018) and a further two were reported by Murray (2023). A recent collection of pupal exuviae in HA9 at Leixlip, County Kildare, yielded two species that are first records for the County, thereby increasing to 73 the total species number for County Kildare. Both species are already documented from HA9 in County Dublin (Murray *et al.*, 2014, 2015).

New records

Subfamily ORTHOCLADIINAE

***Cricotopus (Isocladius) sylvestris* (Fabricius 1794)**

NEW FOR HA8

MEATH: HA8 - Rainwater bucket in yard, Meadesbrook, Ashbourne (O040594), 8 May 2025, pupal exuviae and adult male. This species is widely distributed in Ireland and is now on record from 110 locations. Larvae of *C. sylvestris* are tolerant of many forms of pollution (Wilson and Ruse, 2005) and have been reported from a variety of habitats

***Corynoneura lobata* Edwards, 1924**

NEW FOR KILDARE

KILDARE: HA9 – Rainwater filled plastic tank, Glen Easton Wood, Leixlip, County Kildare (N987365), 6 May 2025, pupal exuviae, leg. Orlagh Murray.

Eleven species of *Corynoneura* are known from Ireland. With the finding of *C. lobata* in Leixlip, this species is now known from 21 locations in Ireland in Counties Clare, Derry, Donegal, Dublin, Kerry, Kildare, Mayo and Meath.

Subfamily CHIRONOMINAE Tribe Chironomini

***Micropsectra lindrothi* Goetghebuer, 1931**

NEW FOR KILDARE

KILDARE: HA9 - Rainwater filled plastic tank, Glen Easton Wood, Leixlip, County Kildare (N987365), 6 May 2025, pupal exuviae, leg. Orlagh Murray.

Thirteen species of *Micropsectra* are documented from Ireland (Murray *et al.*, 2018) and *M. lindrothi* has now been recorded at 61 locations including this new record at Leixlip. It has been found at three locations in HA9 in County Dublin (Murray and Ashe, 2017).

Acknowledgement

Pupal exuviae on which new records for County Kildare are based were collected for the author by his granddaughter Orlagh Murray.

References

- Murray, D. A. (2023) Recent records of Chironomidae (Insecta: Diptera) in Ireland from Counties Dublin, Kildare and Meath and a brief numerical update of the Irish Checklist. *Bulletin of the Irish Biogeographical Society* **46**: 109-123.
- Murray, D. A. and Ashe, P. J. (2017) Additions to the known distribution of Chironomidae (Insecta: Diptera) in Ireland - results from recent and past collections. *Bulletin of the Irish Biogeographical Society* **41**: 112-129.
- Murray, D. A., Langton, P. H., O'Connor, J. P. and Ashe, P. (2013) Distribution records of Irish Chironomidae (Diptera): Part 1 - Buchonomyiinae, Podonominae, Tanypodinae, Telmatogetoninae, Diamesinae and Prodiamesinae. *Bulletin of the Irish Biogeographical Society* **37**: 208-336.

- Murray, D. A., Langton, P. H., O'Connor, J. P. and Ashe. P. (2014) Distribution records of Irish Chironomidae (Diptera): Part 2 - Orthocladiinae. *Bulletin of the Irish Biogeographical Society* **38**: 61-246.
- Murray, D. A., Langton, P. H., O'Connor, J. P. and Ashe. P. (2015) Distribution records of Irish Chironomidae (Diptera): Part 3 - Chironominae *Bulletin of the Irish Biogeographical Society* **39**: 7-192.
- Murray, D. A., O'Connor, J. P. and Ashe P. J. (2018) Chironomidae (Diptera) of Ireland – a review, checklist and their distribution in Europe. *Occasional Publication of the Irish Biogeographical Society* **Number 12** published in association with University College Dublin and the Environmental Protection Agency. 404pp.
- Wilson, R. S. and Ruse, L. P. (2005) A guide to the identification of genera of chironomid pupal exuviae occurring in Britain and Ireland (including common genera from northern Europe) and their use in monitoring lotic and lentic waters. *Freshwater Biological Association, Special Publication* **13**: 1-176.

REPLACEMENT NAMES FOR THREE SPECIES OF *CHIRONOMUS* MEIGEN (DIPTERA, CHIRONOMIDAE)

Declan A. Murray¹ and James P. O'Connor²

¹*Emeritus Associate Professor, School of Biology and Environmental Science, University College Dublin, Belfield, Dublin 4, Ireland.*

e-mail: <declan.murray@ucd.ie>

(address for correspondence: *Meadesbrook, Ashbourne, Co Meath, A84 K727, Ireland*)

²*National Museum of Ireland - Natural History, Merrion Street, Dublin 2, D02 F627, Ireland.*

Abstract

New replacement names are proposed for three primary homonyms in the genus *Chironomus* (Diptera, Chironomidae). Substitute names are: *Chironomus ashei* nom. nov. for *Chironomus laetus* Belyanina and Filinkova (1996) (preoccupied junior primary homonym of *Chironomus laetus* Meigen, 1818); *Chironomus dylani* nom. nov. for *C. venustus* Staeger (1829 sensu Pinder, 1978) and *Chironomus ellejorsava* nom. nov. for *C. albidus* Konstantinov, 1956 (preoccupied, junior primary homonym of *C. albidus* Meigen, 1818).

Key words: Diptera, Chironomidae, *Chironomus*, replacement names.

Introduction

While assembling records for completion of Part 3 of a *World catalogue of Chironomidae*, that had been initiated by the late Patrick Ashe, it was noted that three taxon names for species in the genus *Chironomus* (subfamily Chironominae, tribe Chironomini), should no longer be considered valid. Replacement names for these taxa are proposed below.

Nomenclature

Subfamily Chironominae - Tribe Chironomini

Chironomus (Chironomus) ashei Murray & O'Connor

Belyanina and Filinkova (1996) described *Chironomus laetus* based on morphology and cytology of specimens from the Polar Ural region of Russia. Further records of the species are documented from the Yamal Peninsula of northwest Siberia (Bolshakov *et al.*, 2022) and from Canada and Greenland (Martin, 2022). However, the name *C. laetus* Belyanina and Filinkova (1996) is preoccupied as a junior primary homonym of *Chironomus laetus* Meigen, 1818, now a valid species of *Polypedilum* Kieffer, 1912. We propose *Chironomus (C.) ashei* nom. nov. as a new replacement name for *Chironomus laetus*.

Etymology: named after our friend and late colleague [†]Patrick Ashe in recognition of his major contributions to taxonomy and cataloguing of the Chironomidae.

***Chironomus (Chironomus) dylani* O'Connor**

Wiedemann (1828) assigned the name *Chironomus venustus* for a species described from China. The same binomial was later used by Staeger (1839) for specimens from Denmark and was then adopted generally. Edwards (1929) regarded *venustus* as *C. dorsalis* Meigen var. *venustus* while Pinder (1978) recognised the taxon as *C. venustus* Staeger. Spies and Saether (2004) noted that use of the name *C. venustus* during the latter half of the 20th century largely followed Pinder 1978. Langton and Pinder (2007) included the taxon as “*Chironomus (C.) venustus* sensu Pinder, 1978” in the key to adult male Chironomidae of Britain and Ireland. Recently Martin (2022) commented that *C. venustus* Pinder, 1978 is a misidentification of *C. venustus* Staeger and, noting the comment by Spies and Saether (2004, p. 38), suggests that a new or different name is required. The substitute replacement name *Chironomus (C.) dylani* nom. nov. is proposed here for *Chironomus (C.) venustus* Pinder 1978.

Etymology: named after Dylan O'Connor De Rosa, grandson of the second author.

***Chironomus (Chironomus) ellejorsava* Murray**

Konstantinov (1956) applied the binomial *Chironomus albidus* for the species described from the North Caspian region of Russia. However that name was preoccupied as it was a junior primary homonym of *Chironomus albidus* Wiedemann, in Meigen, 1818. The species was considered of doubtful status by Lindeberg and Wiederholm (1979) and as a nomen dubium in Ashe and Cranston (1990) but was later deemed valid from cytological studies by Belyanina *et al.* (2005) and in Martin (2025) who also noted that a new name was formally required. The substitute replacement name *Chironomus ellejorsava* nom. nov. is proposed here.

Etymology: named after granddaughters of the senior author; Eleanor Lawton and Elle-J., Orlagh and Savannah Murray.

References

- Ashe, P. and Cranston, P. S. (1990) Family Chironomidae. Pp 113-355. In Soós, Á. and Papp, L. (eds) *Catalogue of Palaearctic Diptera. Volume 2*. Akadémiai Kiadó, Budapest.
- Belyanina, S. I. and Filinkova, T. N. (1996) Morphology and karyotypes of three sympatric species of the genus *Chironomus* (Chironomidae, Diptera) from Trans-Polar region. *Entomological Review* **76**(5): 671-680 [Translated from *Zoologicheski Zhurnal* **75**(5), 1996]
- Belyanina, S. L., Polukonava, N. V. and Zinchenko, T. D. (2005) Karítóp i morfologiya lichinki komoara-zvonsta roda *Chironomus* (Chironomidae: Diptera) iz Kaspiiskogo Morya. *Tsitologiya* **47**: 331-337

- Bolshakov, V., Prokin, A., Pavlov, D., Akkizov, A. and Movergoz, E. (2022) [30 November 2022] Karyotypes and COI Gene Sequences of *Chironomus* sp Le1 (Kiknadze and Salova, 1996) and *Ch. laetus* (Belyanina and Filinkova, 1996) and their hybrids from the Yamai Peninsula, Arctic Zone of Russia. *Insects* **2022** 13(12), 1112: doi.org/10.3390/insects13121112
- Edwards, F. W. (1929) British non-biting midges (Diptera, Chironomidae). *Transactions of the Entomological Society of London* **77**: 279-430.
- Konstantinov, A. S. (1956) K sistematike roda *Chironomus* Meig. (On the taxonomy of the genus *Chironomus* Meig.). *Trudy sarat. Otd. kasp. Fil. vses. nauchno-issled. Inst. morsk. ryb. Khoz. Okeanogr.* **4**: 155-192.
- Langton, P. H., and Pinder, L. C. V. (2007) Keys to adult male Chironomidae of Britain and Ireland. *Freshwater Biological Association Scientific Publications* **64**. Volumes 1 and 2.
- Lindeberg, B. and Wiederholm, T. (1979) Notes on the taxonomy of European species of *Chironomus* (Diptera: Chironomidae). Pp 99-116. In Sæther, O. A. (ed.) Recent development in chironomid studies (Diptera: Chironomidae). *Entomologica Scandinavica Supplement* **10**: 1-150.
- Martin, J. (2022). Species 5i *Chironomus laetus* Belyanina. and Filinkova 1966. <Chironomidae.net/Martin/NACyfiles/Sp5i.html>
- Martin, J. (2025) [24 April 2025] Listing of names which have been applied in *Chironomus*, and their present status. Online: <chironomidae.net/Martin/ Chironfiles/Names.htm> [accessed 17 May 2025]
- Meigen, J. W. (1818) [+31 October 1818] *Systematische Beschreibung der bekannten europäischen zweiflügeligen Insekten. Erster Teil*. F. W. Forstmann, Aachen. xxxvi + 332 + [1]pp., 11pls.
- Pinder, L. C. V. (1978) A key to adult males of British Chironomidae (Diptera), the non-biting midges. *Freshwater Biological Association Scientific Publications* **37**. Volumes 1 and 2.
- Spies, M. and Sæther, O. A. (2004) [3 December 2004] Notes and recommendations on taxonomy and nomenclature of Chironomidae (Diptera). *Zootaxa* **752**: 1-90.
- Staeger, C. (1839) Systematisk fortegnelse over de i Danemark hidtil fundne Diptera *Naturhistorisk Tidsskrift* **2**: 549-600.
- Wiedemann, C. R. W. (1828) *Aussereuropäische zweiflügelige Insekten*. **1**. Hamm. 32 + 608pp.

FIRST IRISH RECORDS OF THE SEED-BEETLE *HARPALUS (AMBLYSTUS) HONESTUS* (DUFTSCHMID, 1812) (COLEOPTERA: CARABIDAE) FROM SKELLIG MICHAEL, PÁIRC NÁISIÚNTA NA MARA, CO. KERRY

Myles Nolan

c/o National Museum of Ireland – Natural History, Merrion Street, Dublin 2, Ireland.

e-mail: <mylesnolan@hotmail.com>

Abstract

The ground beetle *Harpalus honestus* (Duftschmid, 1812) (Coleoptera: Carabidae) was collected from Skellig Michael in 2023 and 2024, Co. Kerry, the first Irish records. The beetle is a thermophilous, xerophilous species of fast-draining or dry habitats. Evidence is adduced to demonstrate its preference for montane situations and its southern temperate European distribution. It is suggested the species is a post-glacial relict whose narrow environmental preferences limit its distribution in Ireland.

Key words: Coleoptera, Carabidae, *Harpalus honestus* (Duftschmid, 1812), new, Ireland, Skellig Michael, Kerry.

Introduction

Skellig Michael (Sceilg Mhicí) and the adjacent Little Skellig (Sceilg Bheag) lying *circa* 12k off the Kerry coast, are instantly recognisable as triangles of rock perched on the horizon, and are composed of Old Red Sandstone. In 1986 Skellig Michael was designated a Special Protection Area due to its importance as a breeding site for burrow nesting seabirds including *inter alia* the Manx shearwater *Puffinus puffinus* (Brünnich, 1764), and for a range of other cliff-nesting bird species. In 1996 it was designated a UNESCO World Heritage Site in recognition of its unusual history as a Christian monastic settlement in the latter half of the first and into the second millennium AD. In recent decades it has become a popular tourist destination, and was seen by a global audience in 2019 when it featured in *Star Wars: The Rise of Skywalker* as Luke Skywalker's retreat from the chores of fighting the good fight. Managed by the Office of Public Works (OPW), a range of overlapping interests coalesce around the Skelligs, including archaeological, nature conservation and heritage related tourism. On 22 April 2024, when Ireland's newest National Park (Páirc Náisiúnta na Mara: National Park of the Seas) was announced, no less than three government ministers were involved: Malcolm Noonan, Minister of State for Nature, Heritage and Electoral Reform, Darragh O'Brien, Minister for Housing, Local Government and Heritage and Kieran O'Donnell, Minister of State for the Office of Public Works. Páirc Náisiúnta na Mara encompasses several existing areas of significant heritage and conservation status, including the Skelligs.

I made a number of collecting visits to Skellig Michael in 2023 and 2024 to survey the invertebrate fauna for the National Parks and Wildlife Service (NPWS); collecting through 2023 was done by hand; grubbing through vegetation, beating same into a tray or net, turning stones etc. In 2024, I set transects of pitfall traps at two locations and continued hand-collections. In 2023 I collected a single specimen of a ground beetle (Carabidae) which I identified as *Harpalus (affinis?)* but at the time did not further resolve its identity. In 2024, seven similar specimens were collected by Brian Power (BP) and myself which I identified as *Harpalus honestus* (Duftschmid, 1812), a species not previously recorded from Ireland. The specimen from 2023 proved also to belong to this species. The following identification keys were used: Luff (2007), Duff (2012), Allegro *et al.* (2022) and Lompe (2024). Martin Luff confirmed the identification from photographs of diagnostic features and the dissected aedeagus. The photograph of the male (Plate 1) was taken with a Nikon Digital Sight 1000 camera mounted on a Nikon SMZ1270 stereo-microscope, courtesy of the National Museum of Ireland, Natural History (NMINH) and images stacked using Helicon Focus software. The photo of both sexes (Plate 2) was taken with a phone camera, through the lens of a Nikon stereo-microscope.

RECORDS

CO. KERRY: Skellig Michael: 6 June 2023, V245605, ♂ sifted from vegetative debris pooled at the base of a cliff, coll. MN; 19 June 2024, V24591 60533, ♂ grubbed from spurrey *Spergularia* dominated vegetation, coll. MN; 19 June 2024, V24630 60440, ♀ caught in a humane mousetrap set in the lower lighthouse, coll. MN & BP; 20 June 2024, V24591 60533, ♂♀♀ collected by hand from under sandbags, coll. MN; 20 June 2024, V24637 60492, ♀ beaten into a tray from spurrey *Spergularia* growing on a strongly inclined soil slope, coll. MN; 19 June-16 July 2024, V24514 60605, ♂ pitfall trapped on trampled grass/campion *Silene* sward at a cliff base towards western end of island, coll. MN (traps set at another location in pure campion sward and away from the cliff face did not collect the beetle). All specimens det. MN. The male and female collected from spurrey on 19 June 2024 and 20 June 2024 respectively have been donated to the National Museum of Ireland, registration number, NMINH: 2025.6.

The beetle is a relatively large insect, the Skellig specimens measuring *circa* 9.5-12mm (labium to elytral apex). This might suggest they are larger than British specimens as Luff offers lengths of 8.5-10mm (Luff, 2007). When collecting some of them in strong sunlight they seemed to me to appear a strongly shining green. Pinned and inspected under artificial light the male appears a rather darker shining green (Plate 1). The pronotum and elytra of females are strongly micro-sculptured giving them a rather more matt appearance than the shining males and this is very clear in alcohol (Plate 2). Amongst a number of features observed that distinguish the species from other British and Irish *Harpalus* were: 3-5 punctures at apex of

fifth elytral interval, these completely absent from the apex of the seventh; antennomeres 2-4 basally darkened in dorsal and ventral view, darkening weaker and gradually smaller from antennomere 5 on (infuscation clearest in antero-ventral view); aedeagus in lateral view with a distinctly flat dorsal surface (c.f. Allegro *et al.*, 2022); female elytral sutural apices produced into short, distinct points; all specimens brachypterous, wings reduced to very short stubs. Some of these features, despite the large size of the beetle, were not straightforward to identify. It occurred to me to wonder whether the beetle has possibly been misidentified as another *Harpalus* species, and the same view was expressed to me independently (Roy Anderson, pers. comm.).

Classification and taxonomy

In a major treatment of *Harpalus* genera globally, Kataev (2023) places *H. honestus* in the subgenus *Amblystus* Motschulsky, 1864, nesting within the *Amblystus* Subgroup. Kataev splits the subgenus into two centres of species diversity, one Mediterranean (especially western Mediterranean) and one Himalayan (Kataev, 2023) and notes that some species, especially taxa from the western Mediterranean, are in need of revision. Kataev (2002) earlier reviewed the Himalayan species, referring to them then as the *honestus* group, but *H. honestus* does not occur amongst them.

Preferred environment and distribution

The beetle is generally characterised as thermophilous and xerophilous, strongly montane but occurring also in lowlands, and associated with bare, insolated habitats with fast draining soils (Jeannel, 1942; Freude *et al.*, 1976; Allegro *et al.*, 2022 (citing Koch, 1989); Wachmann *et al.*, 1995; Kataev, 2023). The largest British population, discovered and assessed from 1994 to 1996, supports these findings. It occurs at the base of coastal, sandy cliffs where numerous specimens could be found in very sunny conditions (Luff *et al.*, 1997). Information was downloaded from the Global Biodiversity Information Facility (GBIF, 2025) and confirms the beetle's montane habit, indicating concentrations of records from the Pyrenees, the Ardeche and Ardennes, Provence-Alpes-Cote d'Azur, the alps (stretching across lakes Lemán, Maggiore, Lugano and Como) and a scattering of records from the Austrian uplands. Records from Iran were also from montane environments (Ghahari *et al.*, 2009; Namaghi *et al.*, 2010).

Aleksandrowicz (2011) (citing Löbl and Smetana, 2003) gives its distribution as stretching across southern Europe into the Caucasus and Western Asia. The GBIF (2025) dataset has records from eighteen European countries, and further east from Russia, Armenia and Georgia. Most European records are from Switzerland and France, with far fewer from Germany and Austria, and fewer again from other countries. It barely has a presence in the Baltic with single records from near Kiel (Germany) and Estonia – neither record coastal – and it is absent from

Norway, Sweden and Finland (GBIF, 2025). It occurs on Corsica but there are no records from southern Iberia and the southernmost Italian record mapped lies north of Rome. Ortuño *et al.* (2023) assigned the beetle to the “Turanian-European” biogeographical area (Vigna Taglianti *et al.*, 1992) but the beetle is not recorded from much of the south of this region, and it excludes northern continental Europe and Britain where the beetle does occur.

In an interesting approach to understanding the “origins and affinities” of Irish ground beetles, Anderson *et al.* (2000) applied to them a binary classification system created to assess British Isles’ plant distribution (Preston and Hill, 1997). An appendix included British species not occurring in Ireland and classified *Harpalus honestus* as Southern Temperate Eurosiberian [Biome code 84]. Namaghi *et al.* (2010) echo this, characterising the beetle as an element of a “Sibero-European chorotype”. I have not, however, found records of the beetle from Siberian Russia. Records from eastern Europe seem to be few: first recorded in Belarus in 1997 (Aleksandrowicz, 2011); few Georgian records summarised by Reck and Chaladze (2004); the most easterly records from northern and north-eastern provinces of Iran, where it was recorded at 60° of longitude (Ghahari *et al.*, 2009; Namaghi *et al.*, 2010). The beetle does not seem to extend across the Urals. Preston and Hill’s definition of ‘Eurosiberian’ encompasses Europe extending east to 120°, while ‘European’ includes species “with a mainly European distribution...but do not occur east of 60°” (Preston and Hill, 1997). As such the Biome code 83, Southern Temperate [8] and European [3], might better represent the species’ distribution. It may well occur east of 60° longitude, but how far east and how many records would it take to make the designation ‘Eurosiberian’ more representative?

The preponderance of montane records in Europe is of particular interest with respect to Irish biogeography. Of 2,262 records for *Harpalus honestus* in GBIF (2025) 2,013 are from only four countries and of these 1,431 (71%) had elevation data (Table 1) 79% of Swiss records and 74% of all records are from above 500m. The highest elevation was 2650m from France. The data thus confirms the beetle’s preference for montane situations and records from low-lying areas e.g. Germany, are largely scattered.

The majority of records fall between the 41st and 51st parallels, with over 75% of German records south of the 51st (Benisch, 2025), and it has a minimal presence in more southern areas e.g. southern Spain and Italy. The northern boundary of the Southern zonobiome (Preston and Hill, 1997), does not lie far north of the southern distribution limit of *Harpalus honestus*. All of which suggests the beetle is not tolerant of temperature extremes. An antipathy for such confirms its relatively narrow environmental preferences: insolated areas of cooler montane (coastal in Ireland and Britain) habitats, with a vertical (fast-draining) component and drier soils. It’s occasional occurrence in urban areas e.g. Île de la Cité in the centre of Paris (GBIF, 2025), suggests that components thereof emulate the preferred habitat.

TABLE 1. Elevation data on *Harpalus honestus* from GBIF dataset (GBIF, 2025) detailing the four countries with largest number of records and % of records from between 500-1000m and above 1000m.

	Records	with elevation data		500-1000m		>1000m	
Austria	100	86	86%	37	43%	9	10%
France	353	104	29%	21	20%	57	55%
Germany	111	22	20%	0	0%	0	0%
Switzerland	1449	1219	84%	496	41%	458	38%
18 others	164	44	27%	9	20%	4	9%
	2177	1475	65%	563	38%*	528	36%*
No country	85						
Total	2262						
*38% + 36% = 74%>500m							

The distribution of *Harpalus honestus* is not dissimilar to a number of other carabid beetles occurring rarely in Britain e.g. *Lebia cyanocephala* (Linnaeus, 1758) and *Cymindis axillaris* (Fabricius, 1794). Both have a relatively strong presence in the same montane areas of Europe as *H. honestus* (GBIF, 2025) and both are characteristic of fast draining habitats. The principal differences are their preference for sandy soils and that they have no obvious association with hard-cliff habitat. In Britain, they occur at low altitudes in the south and *C. axillaris* has a strong coastal presence in western Atlantic locations.

Rarity and conservation status

In the UK the species is Red Listed as Vulnerable (D2) (Restricted area of occupancy or number of locations with a plausible future threat that could drive the taxon to CR or EX in a very short time (IUCN, 2012)). This is due to the fact that the population at St Bees Head is abundant and seems to be stable (Telfer, 2016). There are older British records but some doubt about others more recent (Telfer, 2016). It is Critically Endangered in Belgium and has declined in the post-1980 period (Desender *et al.*, 2008). In Germany, it was assessed as Vulnerable (Vorwarnliste – literally ‘advance warning list’), a change from the previous ‘safe’ (ungefährdet) (Schmidt *et al.*, 2016).

Summary and conclusions

Skellig Michael can be characterised as a relatively monotonous, maritime, hard-cliff habitat. The beetle was found in south-facing and insolated situations, often stony, (the north side of the

island is more difficult to access than the south and was essentially not examined). Soils with which it was associated were sandy/gritty, thinly or not vegetated, or vegetated though poorly developed and of little depth. The beetle is a seed-eating species (as other *Harpalus*) and needs local vegetation to sustain populations. Specimens collected at the lower lighthouse cannot be considered synanthropic as the building is highly porous and will inevitably be visited by wandering animals.

Harpalus honestus is a thermophilous beetle preferring insolated, fast-draining habitats. Its presence on Skellig Michael is probably related to the south-facing cliff faces producing a heat-sink effect, in combination with vertical/sloping surfaces and rather dry soils that provide rapid-draining. Other thermophilous species identified from Skellig Michael include the ants *Myrmica sabuleti* Meinert, 1861 and *Tetramorium caespitosum* (Linnaeus, 1758), the latter of which was frequently seen. *H. honestus* can be characterised as a Southern Temperate European species with a strong montane habit. Skellig Michael provides a western, lowland corollary to the insolated, montane habitats of western and central southern Europe where it is most frequently recorded. It seems to be relatively abundant on Skellig Michael suggesting it is tolerant of the anthropogenic disturbances the island has seen, especially over the last 200 years; it is difficult to suggest it would qualify as Critically Endangered or Endangered if assessed under Red List criteria and would probably merit the same status as Britain, Vulnerable (D2).

How the beetle came to be on Skellig Michael is a pertinent question. The brachypterous condition of all specimens found precludes the possibility of their reaching it by flying. It might be easy to suggest it was introduced by human agency; however, this begs the question of the location of a source population. It is wholly improbable that *H. honestus* does not (or did not at some time) occur on mainland Ireland also. The British records from St Bees Head were originally attributed to import activities at the port of Whitegate, some 6km away; it was felt the species could not have been previously missed from elsewhere in Britain (Luff *et al.*, 1997). Telfer (2016), however, in his review of threatened British Carabidae, favoured the view that the St Bees' beetles are a 'native isolated population' that has persisted for a long period of time 'but remains restricted to this small area of specialised natural habitat'. This comment could be applied to the population on Skellig Michael, and finding the population there surely bolsters the argument for the 'native' status of the population at St Bees.

Harpalus honestus' distribution suggests a truncated version of the well-known spring gentian *Gentiana verna* L., which is essentially restricted to the karst landscape of the Burren and south Galway, and is found barely anywhere else in Ireland. While the gentian occurs also in widely separated locations such as central Asia and arctic Russia, its main area of occupancy are the mountainous areas of Europe noted above for *H. honestus*. As such, the beetle might be grouped with those plants and animals whose small or isolated Irish populations are found well away from the main area of European distribution and, as with many of these, it is difficult to

explain how it came to occur in Ireland.

Harpalus honestus in Ireland would seem to be a relict of the post-glacial period. Its restricted environmental preferences suggest little ability to adapt to the landscape characteristic of most of Ireland today. The obvious place to look for other populations of the beetle in Ireland would be south-facing, maritime hard-cliff with vegetated sandy, fast-draining soils below.

Given this is the only known Irish population, and given the status of Skellig Michael as a World Heritage location, its presence there would merit fuller investigation.

Acknowledgements

Thanks are due especially to Philip Buckley (Regional Manager, NPWS) for funding the survey work, and Daniel Buckley, Conservation Ranger, NPWS for assistance on a number of fronts; Pat O'Shea (site foreman Skellig Michael, OPW) provided both a welcome and assistance where needed; Brian Power (Senior Ecologist, Envirico) joined in on some sandbag turning, and brought to my attention the presence of beetles in mouse traps; Willie Kennedy provided transport to and from the island on a number of occasions through 2023 and 2024; Martin Luff kindly confirmed my identifications from a number of photographs. Thanks also to Roy Anderson for reading this note in an earlier draft, providing some references, and making a number of useful suggestions, and to Paolo Viscardi, Keeper of Natural History, National Museum of Ireland - Natural History, for access to laboratory facilities.

References

- Aleksandrowicz, O. (2011) Recent records of steppe species in Belarus, first indications of a steppe species invasion? Pp 475-485. *In* Kotze, D. J., Assmann, T., Noordijk, J., Turin, H. and Vermeulen, R. (eds) *Carabid Beetles as Bioindicators: Biogeographical, Ecological and Environmental Studies*. *ZooKeys* **100**: doi: 10.3897/zookeys.100.1541
- Allegro, G., Magrini, P. and Pavesi, M. (2022). Tabella illustrata di determinazione per le specie del genere *Harpalus* note in Italia (Coleoptera, Carabidae, Harpalinae) [An illustrated key to the species of the genus *Harpalus* recorded from Italy [English version]]. *Bollettino della Società Entomologica Italiana* **154**(2): 51-86.
<<https://doi.org/10.4081/bollettinosei.2022.51>>
- Anderson, R., McFerran, D. and Cameron, A. (2000) *The ground beetles of Northern Ireland*. Ulster Museum Publications **No. 279**.
- Benisch, C. (2025) kerkbtier.de – Beetle Fauna of Germany.
<<https://www.kerkbtier.de/enindex.html>> (accessed 24 April 2025)
- Desender, K., Dekoninck, W. and Maes, D. (2008) An updated Red List of the ground and tiger beetles (Coleoptera) of Flanders (Belgium). *Entomologie* **78**: 113-131.

- Duff, A. G. (2012) *Beetles of Britain and Ireland. Volume 1: Sphaeriusidae to Silphidae*. A.G. Duff, West Runton, Norfolk.
- Freude, H., Harde, K. W. and Lohse, G.A. (1976) *Die Käfer Mitteleuropas 2: Adephaga 1 (Carabidae)*. Goecke & Evers Verlag, Krefeld.
- GBIF (2025) GBIF.org (28 February 2025) GBIF Occurrence Download <<https://doi.org/10.15468/dl.9vrffr>. DOI: <https://doi.org/10.15468/dl.9vrffr>>
- Ghahari, H., Kesdek, M., Samin, N., Ostovan, H., Havaskary, M. and, Imani, S. (2009) Ground beetles (Coleoptera: Carabidae) of Iranian cotton fields and surrounding grasslands. *Munis Entomology & Zoology* **4**(2): 436-450.
- IUCN (2012) *IUCN Red List Categories and Criteria: Version 3.1*. Second edition. Gland, Switzerland and Cambridge, UK: IUCN. iv + 32pp.
- Jeannel, R. (1942) Coléoptères Carabiques. Deuxieme partie. *Faune de France* **40**. 600 pp.
- Kataev, B. M. (2002) Revision of the *Harpalus honestus* group from the Himalaya and a review of the *Harpalus* species from Nepal (Coleoptera: Carabidae). *Russian Entomological Journal* **10**: 357-384.
- Kataev, B. M. (2023) Classification of the Genus *Harpalus* (Coleoptera, Carabidae) of the World Based on Imaginal Morphology. *Diversity* **15**: 971 [pp. 122] <<https://doi.org/10.3390/d15090971>>
- Koch, K. (1989) *Die Käfer Mitteleuropas. Ökologie*. **1**. Goecke & Evers, Krefeld. pp 15-107.
- Löbl, I. and Smetana, A. (2003) *Catalogue of Palaearctic Coleoptera Vol. 1. Archostemata-Myxophaga-Adephaga*. Apollo Books, Stenstrup.
- Lompe, A. (2024) *Käfer Europas*. <<https://coleonet.de/coleo/texte/harpalus.htm#honestus>>
- Luff, M. L. (2007) The Carabidae (ground beetles) of Britain and Ireland. 2nd edition. *Handbooks for the identification of British Insects* **4**(2). Royal Entomological Society.
- Luff, M. L., Read, R. W. J. and Copestake, D. (1997) *Harpalus honestus* (Duftschmid) (Carabidae) discovered in Cumbria. *The Coleopterist* **6**(2): 76-77.
- Namaghi, H. S., Avgin, S. S. and Farahi, S. (2010) New data to the knowledge of ground beetles (Coleoptera: Carabidae) fauna of Iran. *Türkiye Entomoloji Dergisi (Turkish Journal of Entomology)* **34**(2): 197-210.
- Ortuño, V. M., Arribas, O. and Andrés, E. (2023) The Carabidae (Insecta: Coleoptera) of the upper Salientes Valley (León, northern Spain): fauna, chorology, and taxonomic notes. *Graellsia* **79**(1): e189. <https://doi.org/10.3989/graellsia.2023.v79.364>
- Preston, C. D. and Hill, M. O. (1997) The geographical relationships of British and Irish vascular plants *Botanical Journal of the Linnean Society* **124**: 1-120.

- Reck, N. and Chaladze, G. (2004) Checklist of the ground beetles (Coleoptera, Carabidae) of Georgia. *Proceedings of the Institute of Zoology* **22**: 127-154.
- Schmidt, J., Trautner, J. and Müller-Motzfeld, G. (2016) Rote Liste und Gesamtartenliste der Laufkäfer (Coleoptera: Carabidae) Deutschlands. Pp 139-204. In Gruttke, H., Balzer, S., Binot-Hafke, M., Haupt, H., Hofbauer, N., Ludwig, G., Matzke-Hajek, G. and Ries, M. (eds) Rote Liste gefährdeter Tiere, Pflanzen und Pilze Deutschlands, Band 4: Wirbellose Tiere (Teil 2). Münster (Landwirtschaftsverlag). *Naturschutz und Biologische Vielfalt* **70**(4).
- Telfer, M. G. (2016) *A review of the beetles of Great Britain: Ground Beetles (Carabidae): Species Status No. 25*. Natural England Commissioned Reports, **Number 189**.
- Vigna Taglianti, A., Audisio, P. A., Belfiore, C., Biondi, M., Bologna, M. A., Carpaneto, G. M., De Biase, A., De Felici, S., Piatella, E., Racheli, T., Zapparoli, M. and Zoia, S. (1992) Riflessioni di gruppo sui corotipi fondamentali della fauna W-paleartica ed i particolare italiana. *Biogeographia* **16**: 159-179.
- Wachmann E., Platen R. and Barndt, D. (1995) Laufkäfer – Beobachtung, Lebensweise. Naturbuch Verlag, Augsburg.



PLATE 1. *Harpalus honestus* ♂ from Skellig Michael, Co. Kerry. Photograph: Myles Nolan.



PLATE 2. *Harpalus honestus* ♂ (left – the same male as in Plate 1) and ♀ (right) from Skellig Michael, Co. Kerry, photographed in alcohol, showing the contrasting appearance of the two sexes. Photograph: Myles Nolan.

THE VOUCHED, THE UNVOUCHED AND A DIGITAL PHANTOM; FOUR SPIDERS (ARANEAE) PUBLISHED FOR, BUT NOT OCCURRING IN IRELAND

Myles Nolan^{1*} and Sylvia Voss²

¹*c/o National Museum of Ireland - Natural History, Merrion Street, Dublin 2, D02 F627, Ireland. *corresponding author.*

e-mail: <mylesnolan@hotmail.com>

²*Ballywilliam, Ballyporeen, Cahir E21 W253, County Tipperary, Ireland.*

Abstract

The gnaphosid spider *Zelotes subterraneus* (C. L. Koch, 1833) is formally deleted from the Irish list. The names of three spider species recently published for Ireland would constitute the first Irish records, however, voucher specimens were not collected. Therefore, these species have not been safely shown to be established in Ireland and the names should not be included in an Irish checklist. One of the species is now mapped for Ireland in several digital datasets from two independent putative observations. The importance of robust filtering criteria to avoid such eventualities is noted.

Key words: Spiders, Araneae, Ireland, checklist, deleted name, doubtful status, digital data.

Introduction

The maintenance of reliable checklists of species occurring in any given country is fundamental to the study of its natural history, and it is essential that the species listed are evidenced by voucher specimens held in either a museum or private collection. The availability of vouchers allows the veracity of the checklist to be supported and, should a taxonomic issue arise in regard of a species, re-examination of the voucher material might allow its resolution. Examination of voucher material has thus led to the deletion of a number of names of misidentified spiders found on Irish checklists (Nolan, 2004, 2020).

The default position is to exclude unvouched species from checklists. However, it can be worth considering a range of grounds for rejecting a species where possible. The presence of a name on a checklist can have implications beyond merely being wrong.

Irish records of *Entelecara errata* O. P.-Cambridge, 1913, a strongly montane species, suggested it occupied in Ireland wholly atypical environments (Mackie and Millidge, 1970; Mackie, 1972). While it was not possible to locate all of the specimens involved, examination of some of the misidentified vouchers, in combination with the improbable habitat association, meant the species could be deleted. This also negated the implication that the species had very different environmental preferences in Ireland compared to other countries.

It has become a commonly accepted practice to delete a species name if it has not been

recorded for 100 years or more. The absence of a recent record of a species associated with a demonstrably negatively-impacted habitat might imply an extinction has occurred. I have argued previously there is little point to the ‘100-year rule’ if collecting has not been carried out over much of that period, as is the case in Ireland for spiders, most especially from *circa* 1930-1980 (Nolan, 2020, 2021). Keeping historical records on a checklist, until such time as their removal can be reasonably defended, can be preferable to their blunt excision. In the case of the ‘tarantula’ species, *Atypus affinis* Eichwald, 1830, a single web suggested an Irish presence, but varied historical evidence indicated it had been almost certainly introduced (Nolan, 2020). Providing a substantial explanation of the record obviates the possibility that the species will be declared ‘extinct’, which would wholly misrepresent the situation. With regard to more recent records, it can be relatively straightforward to establish the existence (or not) of voucher specimens. In the case of species new to Ireland, or which have not been substantially evidenced previously, vouchers should *always* be retained, regardless of how ‘unmistakeable’ they may be. It is possible that where a species is, apparently, readily identifiable, retaining a voucher might be felt to be unnecessary. This notion seems to be gaining ground now that evidence of a species can be presented also in digital formats e.g. photographs. The existence of readily accessible digital databases further means that records can be easily made widely available. However, ensuring the permanency and accuracy of digital records can be every bit as difficult, for very different reasons, as maintaining a preserved museum collection. The development of digital systems for holding natural history records provides a very useful facility for making available and accessing large datasets of information. However, robust filtering criteria and protocols are essential for assessing the status of species and information to be included.

***Zelotes subterraneus* (C. L. Koch, 1833) – formally deleted from the Irish checklist**

This taxon was first noted as Irish from Co. Wicklow (Carpenter, 1898). Thomas Workman had noted the name *Prosthesima Petiverii* from county Dublin citing an unpublished record of Templeton (Workman, 1880a, b), and this name was later included under *P. subterranea* (Carpenter, 1898). Pack-Beresford added records from two additional counties (Pack-Beresford, 1907, 1909). *Zelotes subterraneus* was synonymised with *Z. apricorum* (L. Koch, 1876), under which name Bristowe published British and Irish records (Bristowe, 1939). *Z. subterraneus* was however revalidated for Britain based on old and recent material, and some investigative work was carried out in Ireland at the time (Murphy and Platnick, 1986). Helsdingen, following these authors, placed a question mark against *Z. subterraneus*’ Irish status noting that they “could not confirm” its presence in Ireland (Helsdingen, 1996). However, none of the older material had been examined. Another closely related species, *Z. longipes* (L. Koch, 1866) was deleted from the Irish list after an examination of NMINH specimens (Nolan, 2004), however, the questionable status of *Z. subterraneus* was not then addressed. A temptation to support

Heldsingen's assertion 'not in Ireland' in that note (Nolan, 2004) was resisted because female specimens had not been critically assessed other than to ensure *Z. longipes* was not involved. Also, Murphy and Platnick (1986) had provided evidence from Britain of possible hybridisation between *Z. subterraneus* and *Z. apricorum*.

A number of Irish specimens assigned to *Z. subterraneus* (or *Z. longipes*) that are held in the collections of the National Museum of Ireland, Natural History (NMINH), were dissected or examined by MN and all could be assigned to *Z. apricorum* (Table 1). Given this, the taxon *Z. subterraneus* can be formally deleted from the Irish list. MN did not include the name in a previous checklist because his doubts had been confirmed by that time (Lavery, 2019).

TABLE 1. Specimens from the NMINH attributed to *Zelotes (Prosthesima) subterraneus*. All could be assigned to *Zelotes apricorum*.

Data label	Year coll.	♂♀	Publication or (collector)	Grid ref (or hectad assigned)
Lough Derg, Galway SE (RW), <i>Prosthesima subterranea</i>	?	1♀	(Robert Welch)	?
Lambay D.R.P.B. June 1906	1906	1♀	Pack-Beresford, 1907	O35
Mount Congreve, Co. Waterford, <i>Prosthesima subterranea</i>	1909	1♀	Pack-Beresford, 1909	S5310
<i>Prosthesima subterranea</i> , Lough Erne Coll. Mr W. de V. Kane	1909	2♀	Pack-Beresford, 1909	H15
Howth cliffs, JNH 1909, <i>Prosthesima subterranea</i>	1909	1♀	(J. N. Halbert)	O23
Riskaheen pt, Lough Derg Co Tipperary RAP 25.5.24	1924	1♂	(R. A. Phillips)	M80
Portumna, Co. Galway S RAP 4.9.24	1924	1♂	(R. A. Phillips)	M80
Nr Gort, Co. Galway S 28.6.25 RAP	1925	1♀	(R. A. Phillips)	M40
Portumna, Co. Galway S RAP 22.4.28	1928	1♀	(R. A. Phillips)	M80
Portumna, Co. Galway S RAP 11.5.30	1930	1♀	(R. A. Phillips)	M80

Three spiders, published but unvouched for Ireland

The names of three spiders have been recorded from near Ballyporeen, Co. Tipperary (Voss, 2024); *Araniella agg cf inconspicua* (Araneidae), *Hygrolycosa cf rubrofasciata* (Lycosidae) and *Neriere radiata* (Linyphiidae). The three observations were made in 2018 and 2019 but the author (SV) was not aware that they would constitute the first published records of these species for Ireland. MN contacted SV in 2025 inquiring whether voucher specimens had been retained but they had not as she was not at that time retaining preserved specimens.

Two species of *Araniella* are currently known from Ireland, *A. cucurbitina* (Clerck, 1757) and *A. opisthographa* (Kulczyński, 1905), and can be distinguished only by a careful examination of the genitalia; *A. inconspicua* is very similar to both, but adults can be distinguished in the field by the absence of lateral dark dots (Sacher, 1990). The specimen could not be collected and hence SV qualified the identification with cf. however, there is no doubt that proving the species is established in Ireland would require a voucher and critical determination of the genitalia. *Hygrolycosa rubrofasciata* is the only representative of the genus in Europe and is a rare spider in Britain where it is red-listed as Endangered (Harvey *et al.*, 2017) and associated especially with eastern fenlands. This wolf spider is difficult to confuse with other species in the field and the habitat of the site was very typical. Because the specimen could not be collected, again SV qualified the identification with cf. however, as with *A. inconspicua* further proof could not be provided in 2025 and this necessarily means there is no reliable evidence for Ireland. *Neriere radiata* (Walckenaer, 1841) was very familiar to SV as it was resident in her garden in Germany. It was seen at Ballywilliam only in 2019 and it could have been transported to Ireland with some of her garden plants (or other garden materials), however, if this was the case, a population has not persisted there. This was an everyday species for SV in Germany so no specimen was collected. At the same time, it is possible to confuse *N. radiata* with *Linyphia hortensis*, which can be seen at the same time of the year. After so many years, SV cannot completely rule out possible confusion with another species. As with the other two species noted above, and to evidence a first occurrence in a country, a voucher specimen and genital determination are a necessity, and most especially where species can be confused. It too is red-listed in Britain as Near Threatened (Harvey *et al.*, 2017). *N. radiata* has been mapped for Ireland on the datasets of the NBDC (NBDC, 2025) and the GBIF (GBIF, 2025). A putative 1992 record of the species from Co. Down, Northern Ireland, is mapped on the NBN (NBN, 2025) and GBIF websites. MN was aware of the Co. Down record from communications with CEDaR (Centre for Environmental data and Recording), however, has not been able to locate a voucher specimen. The name does not appear in any Irish checklists/distribution lists (McFerran and Ross, 1993; Helsdingen, 1996; Cawley, 2009; Lavery, 2019) or a species inventory of spiders of Northern Ireland (McFerran, 1997).

Conclusions

Four spider taxa published as Irish, *Zelotes subterraneus*, *Araniella agg cf. inconspicua*, *Hygrolycosa cf. rubrofasciata* and *Neriene radiata*, should not be considered part of the Irish fauna, and not included in an Irish checklist, until voucher specimens are collected. *Z. subterraneus* can be deleted on basis of an examination of voucher specimens held in the collections of the NMINH. There is a likelihood that *N. radiata* may have been introduced but there is no evidence that it is established. It is best to address the publication of *A. agg cf. inconspicua*, *H. cf. rubrofasciata* and *N. radiata* immediately because it is all too easy for a species' name to create a footprint which can take a long time to erase should that become necessary. It would be wonderful if one or all of these three species could be detected as part of the Irish fauna.

The authors have not attempted to query exactly the path by which the record of *N. radiata* came to be mapped on the NBDC dataset. Nevertheless, and this applies to the Co. Down record in NBN and GBIF also, consultation of the checklists or inventories noted above would have flagged that the record might be either the first for Ireland, or questionable, and in either instance, to be evidenced. Until such time as *N. radiata* is demonstrated to be present in Ireland the NBDC, NBN and GBIF records remain a phantom, an illusion not evidenced in reality. Given the increasing use of such digital datasets by professionals and amateurs alike anyone could be forgiven for believing *N. radiata* to be an element of the Irish fauna. Were a checklist of Irish spiders compiled using the three datasets the name would inevitably be included. A request will be submitted to the three bodies suggesting that the Irish records of *N. radiata* be removed.

Acknowledgement

MN thanks Nigel Monaghan, former Keeper of the Natural History Museum, who facilitated access to the NMINH collections in 2004.

References

- Bristowe, W. S. (1939) *The comity of spiders* 1. i-x, 1-228 pp, 19 plates. Ray Society, London.
- Carpenter, G. H. (1898) A list of the Spiders of Ireland. *Proceedings of the Royal Irish Academy* **5**: 128-210.
- Cawley, M. (2009) A summary of new Irish county records for spiders (Araneae). *Bulletin of the Irish biogeographical Society* **33**: 184-221.
- GBIF (2025) GBIF Secretariat: GBIF Backbone Taxonomy.
<<https://doi.org/10.15468/39omei> Accessed via <https://www.gbif.org/species/2137370>>
(Accessed 15 May 2025)

- Harvey, P., Davidson, M., Dawson, I., Fowles, A., Hitchcock, G., Lee, P., Merrett, P., Russell-Smith, T. and Smith, H. (2017) A review of the scarce and threatened spiders (Araneae) of Great Britain: Species Status No. 22. *NRW Evidence Report* **No. 11**. 101pp. Natural Resources Wales, Bangor.
- Helsdingen, P. J. van (1996) The county distribution of Irish spiders, incorporating a revised catalogue of the species. *Irish Naturalists' Journal Special Zoological Supplement*.
- Lavery, A. (2019) A revised checklist of the spiders of Great Britain and Ireland. *Bulletin of the British arachnological Society* **18**: 196-212.
- Mackie, D. W. (1972) The distribution of some Irish spiders and harvestmen. *Irish Naturalists' Journal* **17**: 234-237.
- Mackie, D. W. and Millidge, A. F. (1970) Spiders and harvestmen from the west of Ireland. *Irish Naturalists' Journal* **16**: 334-338.
- McFerran, D. (1997) Species Inventory for Northern Ireland: Spiders (Arachnida). *Environment and Heritage Research and Development Series* **No. 97/10**.
- McFerran, D. and Ross, H. C. G. (1993) Checklist of the spiders of Ireland. *Bulletin of the Irish Biogeographical Society* **16**: 32-51.
- Murphy, J. A. and Platnick, N. I. (1986). On *Zelotes subterraneus* (C. L. Koch) in Britain (Araneae, Gnaphosidae). *Bulletin of the British Arachnological Society* **7**: 97-100.
- NBDC (2025) National Biodiversity Data Centre, Ireland, *Neriere radiata*. <<https://maps.biodiversityireland.ie/Species/183172>> (accessed 15 May 2025).
- NBN (2025) NBN Trust. *Neriere radiata* map on the NBN Atlas: <<https://species.nbnatlas.org/species/NBNSYS0000152232>>. The National Biodiversity Network (NBN) Atlas. <<https://ror.org/00mcxye41>> (accessed 15 May 2025).
- Nolan, M. (2004) Early records of Irish spiders: two species deleted, two clarifications and type material of *Erigone welchi* Jackson, 1900 (Araneae). *Bulletin of the Irish Biogeographical Society* **28**: 233-243.
- Nolan, M. (2020) Notes on 'Irish' spiders (Arachnida): *Atypus affinis* Eichwald (Atypidae) and *Entelecara errata* O. P.-Cambridge (Linyphiidae) removed from the Irish list; *Cryptachaea blattea* (Urquhart) (Theridiidae) new to Ireland. *Bulletin of the Irish Biogeographical Society* **44**: 189-204.
- Nolan, M. (2021) A first Irish record of *Xysticus kochi* Thorell, 1872, collected in the late nineteenth-century. *Irish Naturalists' Journal* **38**: 49-51.
- Pack-Beresford, D.R. (1907) Contributions to the natural history of Lambay. Araneida. *Irish Naturalist* **16**: 61-65.
- Pack-Beresford, D. R. (1909) A supplementary list of the spiders of Ireland. *Proceedings of*

the Royal Irish Academy **27B**: 87-118.

Sacher, P. (1990) Untersuchungen über Zahl, Anordnung und taxonomischen Wert der dorso-lateralen Abdominalpunkte in der Gattung *Araniella* (Arachnida: Araneae). *Acta Zoologische Fennica* **190**: 345-349.

Voss, S. (2024) A five year study (2018-2022) of the flora and fauna of Ballywilliam (R909907), Ballyporeen, Cahir, Co. Tipperary, Ireland. *Bulletin of the Irish Biogeographical Society* **47**: 25-63.

Workman, T. (1880a) Irish spiders. *Proceedings of the Belfast Natural History & Philosophical Society* **1880**: 267-282.

Workman, T. (1880b) A contribution towards a list of Irish spiders. *Entomologist* **13**: 125-130.

LIFE ALONG THE STREAM – A LOVE STORY; CADDISFLIES COULD TAKE A PRIZE FOR THEIR VARIATION OF SPECIES

†Michael Viney

[**Review:** *A Catalogue and Atlas of the Caddisflies (Trichoptera) of Ireland*. Published in The Irish Times, 12 March 2016, in the Another Life column]

Now that I swallow my pills with icy water from the electric well, the stream has lost a certain presence in our lives. There's no more climbing the hill to find out what's blocking the gravity pipe or left its filter sucking air, so I have rather lost touch with the stream's invigorating life.

The high pool that fed the kitchen tap has a great ocean view, from the Connemara mountains right around to Clare Island. I used to sit there for a while on good days, perhaps attended by a summer wheatear, chacking and bobbing on its rock. On others I might struggle with an airlock, anoraked and stooping – to borrow from Paul Durcan – “backside to the wind”.

Down at the house, double glazing now shuts out the sounds of the stream as it echoes under the bridge and ducks out again through the hedge. The hollow it carved beside the house is muffled in a tangle of fuchsia. Even so, the roar and rumble of the winter floods set a bass note to my bedtime reading. I wondered how any kind of river life could withstand that rampage.

One sort is celebrated in a hefty brick of a paperback – 600-odd pages – published recently by the Irish Biogeographical Society and the National Museum of Ireland. *A Catalogue and Atlas of the Caddisflies (Trichoptera) of Ireland* (irishbiogeographicalsociety.com: €20) is the work of Dr James P O'Connor, emeritus entomologist and former keeper of the Natural History Museum.

When our daughter, Michele, at about 10, was rummaging among the rocks beneath our bridge, she retrieved a little caddis larva stuck to one of their undersides. She was fascinated by its protective armour of minute sticks, stones and sand grains, bound together by silken threads. This prompted a family expedition up the hill, with plastic bags, pillboxes, a net and the kitchen sieve.

I would like to report that the capture of whirligig beetles, water crickets, caddis cases and so on planted a lifelong passion for natural history, but trichoptera could not, as it turned out, compete with *Equus equus Connemaris*, or, her pony.

Jim O'Connor, on the other hand, wanted to be an entomologist from the age of six, as an angler fishing the River Tolka near his home and using caddis larvae for bait. Studying zoology at University College Dublin, he was challenged to identify bottles of adult caddis flies, the more usual lures of casting flies for trout. He was also lucky enough, as a PhD student, to meet

and marry a fellow Tolka prospector, Mary Norton, who became a trichopteran expert in her own right.

Caddis flies could take a prize for their variation of species: they are the most diverse insect order whose members are exclusively aquatic. Some 150 are listed in O'Connor's book, and the pages of distribution maps shows what "biogeography" is about. The scores of dots from his own years of fieldwork speak not only for watery days of turning up rocks and netting caddis flies from bankside vegetation but also for nights beside lakes and streams with portable light traps to attract nocturnal species on the wing. The rather eerie light of the traps, he says, "often caused consternation to courting couples in secluded pull-ins beside rivers and lakes".

Many people think of the adult flies as moths, but "trichoptera" means "hairy wings"; moths and butterflies have fragile scales to create their wing patterns. To anglers they are "sedge flies", from the plants they often cling to by day, and are imitated artificially in the speckled Peter, black silverhorn, cinnamon sedge or caperer in their fly book.

Where "caddis" came from is possibly the Elizabethan street hawkers in England called caddice men, with samples of braids stitched to their coats.

Not all caddis larvae lash their silken tubes to rocks and armour them with handy fragments. Others spin silken nets to filter feed or swim freely, with a strand of silk to stop them drifting. Such illuminating differences distinguish the family groups among some 50,000 trichopteran species across the world.

O'Connor's more personal memoir is as illuminating as the biology, not least of the administrative travails of his long career. His caddis research was interrupted when, in 1988, the Office of Public Works seized upon the early retirement of the then keeper of the Natural History Museum, Colm O'Riordan, to abolish that position. At a superior's friendly entreaty O'Connor took it on, without extra pay, "to safeguard the collections" – this at a time when the museum was swirling with dust from major refurbishment works. He also secured the museum's expansion to a renovated Beggar's Bush barracks.

After 10 years he was "promoted" to the re-established post of keeper, with commensurate pay, but later applied to resume his duties as museum entomologist. In writing his book he and his wife went back to the pond where they had taken caddis flies on their honeymoon, in the 1970s. They found fences a bit difficult but collected "some lovely species".



INDEX TO *BULLETINS* 1-48 OF THE IRISH BIOGEOGRAPHICAL SOCIETY

James P. O'Connor

Emeritus Entomologist, National Museum of Ireland – Natural History, Merrion Street, Dublin 2, D02 F627, Ireland.

e-mail: <joconnor@museum.ie>

Introduction

An index is provided for the articles and notices in *Bulletins of the Irish Biogeographical Society* volumes **1-48** (1977-2025). Keywords are indicated in bold. All the volumes are available for download as PDFs at eDeposit Ireland <<https://www.tcd.ie/library/edepositireland/>> and the Irish Biogeographical Society website <<https://irishbiogeographicalsociety.com/>>

Bulletin dedications

17: Professor Robert Blackith & Mrs Ruth Blackith (Honorary Members); **18**: Dr Marcus W. R. de V. Graham; **19**: John Kilbracken (as he liked to be called), aka Lord Kilbracken of Killegar, John Raymond Godley; **20**: R. C. Faris & A. W. Stelfox; **22**: Professor Bryan P. Beirne; **23**: Professor Carmel Humphries; **24**: Professor John (Jack) Grainger; **25**: Professor Robert Edmund Blackith; **26**: Professor J. A. Kitching & Professor F. J. Ebling; **29**: E. C. Pelham-Clinton, 10th Duke of Newcastle-under-Lyne; **30**: Dr Arthur Went; **31**: Professor John Bracken, Dr Brenda Healy & Dr Thom  s Burke; **41**: Dr Frank Jeal; **46**: Dr Patrick (Paddy) Ashe, Ruth Blackith (n  e Barraclough), Martin Cawley & Dr Don C. F. Cotton; **47**: Dr Christopher Moriarty; **48**: Matt Murphy & Michael Viney.

Index

A

- Anon. (1977) The **Athlone** Weekend **Field** Meeting. **1**: 4.
- Anon. (1977) **Membership** list 1976-1977. **1**: 53-55.
- Adam, P. (1987) Some observations on Irish **saltmarsh vegetation**. **10**: 42-55.
- Akeroyd, J. R. (1980) Two **alien legumes** from waste ground in Dublin. **4**: 50-51.
- Akeroyd, J. R. and Curtis, T. G. F. (1980) Some observations on the occurrence of **machair** in western Ireland. **4**: 1-12.
- Akeroyd, J. R. and Parnell, J. A. N. (1983) A **new** station for *Mercurialis perennis* L. in Co. Clare. **5**: 25-27.
- Aldwell, B. (2003) A **survey** of widespread resident **butterflies** in County Donegal, Ireland: **27**: 187-199.
- Aldwell, B. (2003) A **survey** of local resident **butterflies** in County Donegal, Ireland. **27**: 202-226.

- Aldwell, B. (2003) A **survey** of migrant **butterflies** in County Donegal, Ireland. **27**: 270-280.
- Aldwell, B. (2012) **Review**. *Ireland's butterflies a review* by David Nash, Trevor Boyd and Deirdre Hardiman. **36**: 232-234.
- Alexander, K. N. A. (2004) **New** vice-county records for **lacewings** (Neuroptera) from Northern Ireland. **28**: 143-146.
- Alexander, K. N. A. (2004) *Neobisium carpenteri* (Kew) (Arachnida: Pseudoscorpiones) – a **false scorpion unique** to County Cork, Ireland. **28**: 229-232.
- Alexander, K. N. A. (2005) *Neobisium carpenteri* (Kew) (Arachnida: Pseudoscorpiones) – a **false scorpion new** to County Kerry, Ireland. **29**: 242-244.
- Anderson, A., Helden, A., Carnus, T., Gleeson, R., Sheridan, H., McMahon, B., Melling, J., Lovic, Y. and Purvis, G. (2008) **Arthropod** biodiversity of agricultural **grassland** in south and east Ireland: introduction, sampling sites and **Araneae**. **32**: 142-159.
- Anderson, A., McCormack, S., Helden, A., Broad, G., Baur, H., Noyes, J. and Purvis, G. (2008) **Arthropod** biodiversity of agricultural **grassland** in south and east Ireland: **Parasitoid** Hymenoptera. **32**: 201-211.
- Anderson, R. (2000) **Review**. *Atlas of the land and freshwater molluscs of Britain and Ireland*. **24**: 181-183.
- Anderson, R. (2025) Annotated **checklist** of **saproxylic Coleoptera** in the counties of Northern Ireland. **24**: 24-97.
- Arroyo, J., Baars, J. R., O'Driscoll, L., Blackmore, M. and Bolger, T. (2013) **First** records of *Heminothrus (Capillonothrus) thori* (Berlese, 1904) and *Perlohmannia (Perlohmannia) dissimilis* (Hewitt, 1908) (Arachnida: Acari: **Oribatida**) in Ireland. **37**: 12-16.
- Arroyo, J., Kenny, J. and Bolger, T. (2012) A **survey** of the Oribatida and Mesostigmata (**Acarina**) of Irish **forests**. **36**: 33-59.
- Arroyo, J., Moraza, M. L. and Bolger, T. (2008) **First** records of *Leptogamasus (Leptogamasus) obesus* (Holzmann, 1969) and *Leptogamasus (Valigamasus) pannonicus* (Willmann, 1951) (**Acari**: Gamasida: Parasitidae) in Ireland. **32**: 212-215.
- Ashe, P. (1986) A **checklist** of Irish **Dixidae** (Diptera). **9**: 46-50.
- Ashe, P. (1987) The families **Anisopodidae** and **Thaumaleidae** (Diptera: Nematocera) in Ireland with comments on relevant **Haliday** manuscripts. **10**: 107-123.
- Ashe, P. (1988) *Mycetobia obscura* Mamaev (Diptera: Anisopodidae), a species **new** to Ireland and a first record for the British Isles. **11**: 2-5.
- Ashe, P., Murray, D. A. and J. P. O'Connor, J. P. (2018) Recognition of two additional **fossil** subfamilies in the **Chironomidae** (Diptera) - †Dungeyellinae Subfam. Nov. and †Cretodiamesinae Kalugina Stat. Nov. **42**: 225-242.

- Ashe, P. and O'Connor, J. P. (1990). Further records of Irish **Dixidae** (Diptera) including *Dixella attica* Pandazis, **new** to Ireland. **13**: 23-28.
- Ashe, P. and O'Connor, J. P. (2019) **Validation** of the **fossil** genus name †*Acutiforcipia* (Diptera: **Chironomidae**: Orthoclaadiinae). **43**: 131-132.
- †Ashe, P. and O'Connor, J. P. (2025) Notes on a new **groundplan** hypothetical **Diptera wing**, **48**: 3-23.
- Ashe, P., O'Connor, J. P., Alexander, K. N. A., Chandler, P. J. and Oosterbroek, P. (2008) **Additions**, with some corrections, to the records of the **crane flies** of Ireland (Diptera: Cylindrotomidae, Limoniidae, Pediciidae and Tipulidae). **32**: 6-20.
- Ashe, P., O'Connor, J. P. and Chandler, P. J. (2012) A revised **checklist** of the **biting midges** (Diptera: **Ceratopogonidae**) of Ireland. **36**: 190-231.
- Ashe, P., O'Connor, J. P. and Chandler, P. J. (2013) A revised **checklist** of the **biting midges** (Diptera: **Ceratopogonidae**) of Ireland: correction. **37**: 56-57.
- Ashe, P., O'Connor, J. P., Chandler, P. J., Stubbs, A. E. and Vane-Wright, R. I. (2005) The **crane flies** (Diptera) of Ireland. **Part 3**. Limoniidae: Dactylolabinae and Limnophilinae. **29**: 312-344.
- Ashe, P., O'Connor, J. P., Chandler, P. J., Stubbs, A. E. and Vane-Wright, R. I. (2005) The **crane flies** (Diptera) of Ireland. **Part 4**. Cylindrotomidae. **29**: 345-350.
- Ashe, P., O'Connor, J. P., Chandler, P. J., Stubbs, A. E., Vane-Wright, R. I. and Alexander, K. N. A. (2007) The **crane flies** (Diptera) of Ireland. **Part 5**. Tipulidae. **31**: 296-357.
- Ashe, P., O'Connor, J. P., Chandler, P. J., Stubbs, A. E., Vane-Wright, R. I. and Alexander, K. N. A. (2007) The **crane flies** (Diptera) of Ireland. **Part 6**. Limoniidae: Chioneinae. **31**: 358-408.
- Ashe, P., O'Connor, J. P., Chandler, P. J., Stubbs, A. E., Vane-Wright, R. I. and Blackith, R. E. (1991) **Crane flies** new to Ireland (Diptera: Cylindrotomidae, Limoniidae, Tipulidae). **14**: 54-59.
- Ashe, P., O'Connor, J. P., Chandler, P. J., Stubbs, A. E., Vane-Wright, R. I. and Blackith, R. E. (1995) The **crane flies** (Diptera) of Ireland. **Part 1**. Limoniidae: Pediciinae. **18**: 136-147.
- Ashe, P., O'Connor, J. P., Chandler, P. J., Stubbs, A. E., Vane-Wright, R. I. and Blackith, R. E. (1998) The **crane flies** (Diptera) of Ireland. **Part 2**. Limoniidae: Limoniinae. **22**: 102-127.

B

- Baars, J.-R., Lyons, R. and Kelly-Quinn, M. (2005) The **first** records of *Ameletus inopinatus* Eaton, 1887 (**Ephemeroptera**: Ameletidae) in upland streams in Co. Kerry, Ireland. **29**: 308-311.

- Baker, R. A. and Bayliss, R. A. (2005) A **review** and **update** of the mesostigmatid and prostigmatid **mites** of the marine littoral and supralittoral in Ireland based on the work of J. N. **Halbert** (1872-1948), including a checklist, revised nomenclature, collecting sites and recent records of mites. **29**: 280-299.
- Barber, A. D. (1984) Irish **centipedes**. **7**: 2-10.
- Barnard, P. C., O'Connor, J. P. and O'Connor, M. A. (1987) Some records of Irish **Neuroptera** (Insecta). **10**: 72-80.
- Barnard, P. C., O'Connor, J. P. and Speight, M. C. D. (1991) A **review** of published distribution data for Irish **Neuroptera** (Insecta), together with additional records and a check-list of the Irish species. **14**: 109-123.
- Becerra Jurado, G., Johnson, J. and Kelly-Quinn, M. (2007) A **new** record of *Dytiscus circumflexus* Fabricius 1801, from Co. Waterford, Ireland. **31**: 194-196.
- Bilton, D. T. (1988) A **survey** of aquatic **Coleoptera** in central Ireland and the **Burren**. **11**: 77-94.
- Blackith, R. and Blackith, R. (1987) Studies on the **Murrough**, Co. Wicklow, Ireland. 2: the **flesh-flies** (Diptera: Sarcophaginae). **10**: 35-41.
- Blackith, R. and Blackith, R. (1993) **Diptera** (Insecta) attracted to the **Dragon's Mouth Lily** (*Dracunculus vulgaris* Schott) in Ireland. **16**: 2-8.
- Blackith, R. E., Blackith, R. M., Speight, M. C. D. and de Courcy Williams, M. (1991) A first list of **Diptera** from the **Murrough**, Co. Wicklow, Ireland, including 663 species and 140 breeding records. **14**: 185-253.
- Blackith, R. E. and Good, J. A. (1991) **Protura** in Ireland. **14**: 84-89.
- Blackith, R. M. and Blackith, R. E. (1991) **Calypterate flies** (Diptera: Anthomyiidae and Fanniidae) **new** to Ireland (*Hydrophoria caudata*, *Lasiomma meadi*, *L. anthomyinum*, *Pegohylemyia phrenione*, *Pegomya geniculata*, *Phorbia securis*, *Fannia norvegica* and *F. melania*). **14**: 124-128.
- Blackith, R. M., Blackith, R. E. and Speight, M. C. D. (1988) Studies on the **Murrough**, Co. Wicklow, Ireland: 3. **Carrion beetles** (Coleoptera). **11**: 28-34.
- Bolger, T. (1989) A **further** Irish record of *Geoplana sanguinea* (Moseley) (Tricladida: Geoplanidae). **12**: 152.
- Bolger, T. (1990) **Acari** of the families Macrochelidae and Veigaiidae (**Megostigmata**) recorded from Ireland. **13**: 29-43.
- Bond, K. (2005) The **status** of the members of the genus *Oligia* Hübner, 1821 (**Lepidoptera**: Noctuidae) in Ireland. **29**: 130-142.
- Bond, K. G. M. (1985) Invertebrates of Irish Midlands **raised bogs**: part III. **Lepidoptera**. **8**: 103-110.

- Bond, K. G. M. (1989) **Clonmacnoise** Heritage Zone, Co. Offaly, Ireland: assessment of conservation value based on **Lepidoptera** recorded from 1983 to 1987. **12**: 63-89.
- Bond, K. G. M. (1991) A preliminary survey of the **Lepidoptera** of Pollardstown **Fen**, Co. Kildare, including a record of *Cosmopterix lienigiella* (Lienig and Zeller, 1839) (Cosmopterigidae), a species new to Ireland. **14**: 24-47.
- Bond, K. G. M. (1995) Irish **Microlepidoptera** check-list. **18**: 176-262.
- Bond, K. G. M. and O'Connor, J. P. (2012) **Additions**, deletions and corrections to *An annotated checklist of the Irish butterflies and moths (Lepidoptera)* with a concise **checklist** of Irish species and *Elachista biatomella* (Stainton, 1848) **new** to Ireland. **36**: 60-179.
- Bryant, A. (2025) A checklist of the butterflies and moths (**Lepidoptera**) of County **Waterford**. **48**: 107-153.
- Buhl, P. N. and O'Connor, J. P. (2010) **Distributional** records of Irish **Platygastridae** with corrections and additions to the Irish list. **34**: 3-17.
- Buhl, P. N. and O'Connor, J. P. (2012) **Distributional** records of Irish Platygastroidea: **Platygastrinae** and **Ceraphronoidea**: Ceraphronidae including *Aphanogmus elegantulus* new to Ireland. **36**: 15-23.

C

- Caffrey, J. and King, J. J. (1989) Aspects of **charophyte** ecology in three **drained** tributaries of the River Boyne, Ireland. **12**: 6-17.
- Caffrey, J. and Synnott, D. M. (1987) The **aquatic vegetation** of Derrylea Lake, West Galway, Ireland, with special reference to the **mosses**, *Fissidens polyphyllus* Wils. Ex Br. Eur. and *Calliergon trifarium* (Web. and Mohr) Kindb. **10**: 94-98.
- Callanan, M., Baars, J.-R. and Kelly-Quinn, M. (2008) A new record of the **blackfly** *Prosimulium latimucro* Enderlein (Diptera: Simuliidae) in an **upland** lake outlet stream in Co. Leitrim, Ireland. **32**: 3-5.
- Carvill, P. H. (1977) **Athlone Field** Meeting: exposure effects on Hare Island. **1**: 10-13.
- Carvill, P. H. (1980) **Floristic notes** from Co. Dublin (H21). **4**: 23-27.
- Cawley, M. (1999) **New** Irish vice-county records for **harvestspiders** (Arachnida: Opiliones). **23**: 82-88.
- Cawley, M. (2001) Distribution records for **uncommon spiders** (Araneae) including five species **new** to Ireland. **25**: 135-143.
- Cawley, M. (2001) Records for **uncommon centipedes** (Chilopoda) including *Brachyschendyla dentata* Brölemann and Ribaut and *Cryptops anomalans* Newport **new** to Ireland. **25**: 170-172.

- Cawley, M. (2001) Some records for **uncommon** Irish **millipedes** (Diplopoda), including *Adenonemeris gibbosa* Mauriès, 1960 and *Nopoiulus kochii* (Gervais, 1847). **25**: 173-179.
- Cawley, M. (2001) Notes and records of the Irish **woodlice** (Crustacea: Isopoda), including **new** sites for *Halophiloscia couchi* (Kinahan). **25**: 211-217.
- Cawley, M. (2002) **Vascular plant** records from various Irish **vice-counties**. **26**: 64-74.
- Cawley, M. (2002) A **review** of the Irish **harvestmen** (Arachnida: Opiliones). **26**: 106-137.
- Cawley, M. (2002) **Distribution** records for **false-scorpions** (Arachnida: Pseudoscorpiones), including *Neobisium carpenteri* (Kew) and *Pselaphoernes scorpiodes* (Hermann). **26**: 211-219.
- Cawley, M. (2004) **New** Irish sites for the exotic **terrestrial amphipod** *Arcitalitrus dorrieni* (Hunt, 1925) (Crustacea: Amphipoda). **28**: 199-203.
- Cawley, M. (2004) Some further records for **uncommon spiders** (Araneae), including four species new to Ireland. **28**: 207-228.
- Cawley, M. (2005) Notes and records on some Irish **Orthoptera** and **Dermaptera**. **29**: 300-347.
- Cawley, M. (2007) The **spider** (Arachnida: Araneae) fauna of **Tory Island**, Co. Donegal, Ireland. **31**: 20-43.
- Cawley, M. (2008) More records for **uncommon spiders** (Araneae), including four species **new** to Ireland. **32**: 69-83.
- Cawley, M. (2008) Distribution records for **uncommon ants** including *Stenamma debile* (Foerster) (Hymenoptera: Formicidae) **new** to Ireland. **32**: 84-89.
- Cawley, M. (2009) **New** records for Irish **false-scorpions** (Arachnida: Pseudoscorpiones), also incorporating a county checklist. **33**: 99-114.
- Cawley, M. (2009) Some records for **uncommon weevils** (Coleoptera: Curculionidae), including *Squamapion atomarium* (Kirby) **new** to Ireland. **33**: 170-173.
- Cawley, M. (2009) A summary of **new** Irish county records for **spiders** (Araneae). **33**: 184-221.
- Cawley, M. (2010) A **review** of the Irish **centipedes** (Chilopoda). **34**: 18-64.
- Cawley, M. (2012) **New** Irish records for *Anelasmacephalus cambridgei* (Westwood) (Arachnida: **Opiliones**). **36**: 180-182.
- Cawley, M. (2012) **New** Irish records for uncommon **Orthoptera** and **Dermaptera**. **36**: 183-185.
- Cawley, M. (2012) More records for **uncommon weevils** (Coleoptera: Curculionidea), including *Omphalapion hookeri* Kirby new to Ireland. **36**: 186-189.
- Cawley, M. (2013) *Tetragnatha striata* L. Koch (Araneae: Tetragnathidae) **confirmed** as an Irish species. **37**: 104-105.

- Cawley, M. (2013) Records of **uncommon** ground beetles (Coleoptera: **Carabidae**) from north-west Ireland. **37**: 109-114.
- Cawley, M. (2014) Records for **uncommon** Irish **beetles** (Coleoptera), including *Phacophallus parumpunctatus* (Gyllenhal) (Staphylinidae). **38**: 280-284.
- Cawley, M. (2015) A **third** Irish site for the **scarab bug** *Thyreocoris scarabaeoides* (L.) (Hemiptera: Thyreocoridae). **39**: 212-214.
- Cawley, M. (2016) An **indexed** bibliographical **checklist** of the **false-scorpions** (Arachnida: Pseudoscorpiones) of Ireland (1836-2014). **40**: 116-124.
- Cawley, M. (2017) Some recent records for **uncommon** Irish **woodlice** (Crustacea: Isopoda). **41**: 140-144.
- Cawley, M. (2017) An **indexed** bibliographical **checklist** of the **woodlice** (Crustacea: Isopoda) of Ireland (1836-2017). **41**: 145-177.
- Cawley, M. (2020) More records of **uncommon** Irish **beetles** (Coleoptera), including *Chilothorax conspurcatus* (Linnaeus, 1758) (Scarabaeidae). **44**: 252-260.
- Cawley, M. (2021) An **indexed** bibliographical **checklist** of the **harvestmen** (Arachnida: Opiliones) of Ireland, 1836-2020. **45**: 62-76.
- Cawley, M. and Nelson, B. (2013) *Heterogaster urticae* (Fabricius) (Heteroptera: Lygaeidae) **confirmed** as an Irish species. **37**: 106-108.
- Chandler, P. J. (1987) **New** data on Irish fungus **gnats** (Diptera: Mycetophiloidea) including 51 species new to the Irish list [errata **11**: 118]. **10**: 2-27.
- Chandler, P. J. and Speight, M. C. D. (1983) A **preliminary** list of the Irish **Tephritidae** (Diptera), with notes on the species. **6**: 2-17.
- Collins, D. W. (2024) A **survey** of Irish **thrips** (Insecta: Thysanoptera) in the collections of the Natural History Museum, London, with three additions to the Irish checklist. **47**: 3-24.
- Committee (1987) The Irish Biogeographical Society: **constitution**. **10**: 155-160.
- Costello, M. J. and Moore, J. J. (1989) **Amphipod** crustaceans **new** to **Britain** and the Plymouth area. **12**: 2-5.
- Cotton, D. C. F. (1978) **Observations** on the biogeography of lumbricid **earthworms** (Oligochaeta: Lumbricidae). **2**: 18-25.
- Cotton, D. C. F. (1978) **Observations** on the **vertebrates** recorded in the **Cong** District of Co. Mayo between the 8th and 11th April, 1977. **2**: 55-57.
- Cotton, D. C. F. (1980) **Distribution** records of **Orthoptera** (Insecta) from Ireland. **4**: 13-22.
- Cotton, R. F. and Cotton, D. C. F. (1999) Some records of **social wasps** (Hymenoptera: Vespidae) from north-west Ireland. **23**: 98-100.

- Cromien, S. and O'Connor, J. P. (2001) A record of the **Monarch Butterfly** *Danaus plexippus* L. (Insecta: Lepidoptera) from County **Wexford**, Ireland, with a **review** of other Irish occurrences. **25**: 3-6.
- Curtis, T. (1977) Athlone **Field Meeting**: comparison of grazed and ungrazed transects on **Hare Island**. **1**: 13-16.
- Curtis, T. (1977) Athlone **Field Meeting**: species list of the Pteridiophyta, Gymnospermae and Angiospermae. **Hare Island**, Lough Ree, June 1976. **1**: 17-19.
- Curtis, T. and Harrington, T. (1977) The **Baltinglass Meeting**. 3rd. July 1976. **1**: 7-41.
- Curtis, T. G. F. (1986) **Review**. Council of Europe: 2nd colloquy on computer applications in the field of nature conservation. **9**: 67.
- Curtis, T. G. F. and McGough, H. N. (1984) An **unusual** habitat for *Dryas octopetala* L. **7**: 11-13.
- Curtis, T. and Mothersill, C. (1978) **New** additions to the **flora** of County **Leitrim**, H 29. **2**: 42-44.
- Curtis, T. G. F., McGough, H. N. and Akeroyd, J. R. (1983) The **flora** of the **Mullet Peninsula**, West Mayo (H 27). **5**: 38-46.
- Curtis, T. G. F. and Quigley, M. B. (1978). Micro-geographical **polymorphism** in annual **plant** species. **2**: 3-17.

D

- de Courcy Williams, M. (1989) A preliminary **list** of the Irish **Auchenorrhyncha** (Homoptera). **12**: 135-148.
- de Grave, S. and Myers, A. A. (1999) Records of macrobenthic **Crustacea** from **maerl** habitats in Irish waters. **23**: 101-123.
- Doogue, D. (1977) Athlone **Field Meeting**: **woodlice** in the Lough Ree District. **1**: 25-27.
- Douglas, D. J. and McCall, G. (1992) The **freshwater Ostracoda** of Ireland. **15**: 91-109.
- Duigan, C. (1987) The **Cladocera** (Crustacea) of County **Offaly**, Ireland. **10**: 81-93.
- Duigan, C. (1988) The **Cladocera** (Crustacea) of Lough Ree and neighbouring **waterbodies** in Ireland. **11**: 100-113.
- Duke, M. J. (1994) **New** records of *Beraeodes minutus* (L.) and *Allotrichia pallicornis* (Eaton) (**Trichoptera**) in Ireland. **17**: 7-8.

E

- Editor (1987) **Notice**. *Proceedings of the Postglacial Colonization Conference*. **10**: 161-162.
- Editor (1993) **Notice**. *Biogeography of Ireland: past, present, and future*. **16**: 145-147.
- Editor (1998) **Notice**. *A checklist of Irish aquatic insects*. **22**: 235-236.

- Editor (1999) **Notice**. *A catalogue of the Irish Braconidae (Hymenoptera: Ichneumonoidea)*. **23**: 165-166.
- Editor (2005) **Notices**. *A catalogue and index of the publications of the Irish Biogeographical Society (1977-2004) and First supplement to A bibliography of Irish entomology*. **29**: 351-352.
- Editor (2006) **Notice**. *An annotated checklist of the Irish butterflies and moths (Lepidoptera)* compiled by K. G. M. Bond, R. Nash and J. P. O'Connor. **30**: 380-381.
- Editor (2008) **New publication**. *An annotated checklist of the Irish two-winged flies (Diptera)* compiled by Peter J. Chandler, James P. O'Connor and Robert Nash. **32**: 219.
- Editor (2009) **New publication**. *An annotated checklist of the Irish Hymenoptera*. **33**: 222.
- Editor (2011) **New publication**. *A world catalogue of Chironomidae (Diptera)*. Part 1. **35**: 162.
- Editor (2012) **New publications**. *Second Supplement to A bibliography of Irish entomology compiled by James P. O'Connor; An annotated checklist of the Irish Hemiptera and small orders compiled by James P. O'Connor and Brian Nelson; A World Catalogue of Chironomidae (Diptera) Part 2. Orthocladiinae compiled by Patrick Ashe and James P. O'Connor*. **36**: 235.
- Editor (2015) **New publication**. *A catalogue and atlas of the caddisflies (Trichoptera) of Ireland* by James P. O'Connor MRIA. **39**: 275.
- Editor (2018) **New publication**. *Chironomidae (Diptera) of Ireland – a review, checklist and their distribution in Europe* by Declan A. Murray, James P. O'Connor and Patrick J. Ashe. **42**: 246.
- Editor (2021) **New Occasional Publication**. *Atlas of the Irish Trichoptera (Caddisflies)* by James P. O'Connor. **45**: 125.
- Editor (2023) **New Occasional Electronic Publication**. *Bibliography of Irish insects (1802-2020)* by James P. O'Connor. **46**: 134.
- Editor (2024) **New publication**. *Bibliography of Irish insects (1802-2020)* by James P. O'Connor. **47**: 2.
- Editor (2025) **New publication**. *A World Catalogue of Chironomidae (Diptera) Part 4. Fossil Chironomidae*. **48**: 2.

F

- Feeley, H. B. and Baars, J.-R. (2020) Some records of adult **stoneflies** (Plecoptera), including observations on **wing length**, from Ireland, 2018-2020. **44**: 236-241.
- Feeley, H. B., Barber-James, H. M., Kennedy, B., Kenny, A., McGrath, D., Miles, G., Mitchell, R. and Baars, J.-R. (2024) **Stonefly** (Plecoptera) records from Ireland in 2023, with **additional** records from 2009 to 2022. **47**: 163-184.

- Feeley, H. B., Barber-James, H. M., Kennedy, B., McGrath, D., Mitchell, R., Rosell, S., Weir, A. and Baars, J.-R. (2025) **Records of stoneflies** (Plecoptera) from Ireland in 2024. **48**: 210-227.
- Feeley, H. B., Kennedy, B., McNaughton, C. and Baars, J.-R. (2021) Records of adult **stonefly** (Plecoptera) from Ireland in 2021, with observations on wing length and wing **crumpling**. **45**: 47-55.
- Feeley, H. B., Kennedy, B., Mitchell, R. and Baars, J.-R. (2023) Adult **stonefly** (Plecoptera) records from Ireland in **2022**. **46**: 48-61.
- Fern, J. (2012) A record of *Micrommata virescens* (Clerck, 1757) (**Araneae**: Sparassidae) from the **Killarney** National Park, Co. Kerry, Ireland. **36**: 24-25.
- Foss, P. J. (1985) **Field** meeting to Mouds **Bog** and Pollardstown **Fen**, Co. Kildare, 9 June 1984. **8**: 114-117.
- Foss, P. J. (1986) **Field** excursion to the **Derry Hills**, Co. Laois – 6 July 1985. **9**: 57-62.
- Foss, P. J. (1987) **Field** excursion to **Clara Bog**, Co. Offaly – 16 August 1986. **10**: 137-141.
- Foss, P. J. and Speight, M. C. D. (1989) *Stethophyma grossum* (L.): a further **Midland** record with comment on the status of this **grasshopper** in Ireland (Orthoptera: Acrididae). **12**: 90-93.
- Foster, G. N. (2010) **Heteroceridae** (Coleoptera) in Ireland. **34**: 108-127.
- Fox, H. (2001) **Review**. *The liverwort flora of the British Isles*. **25**: 307-308.
- Fox, H. F. (1994) **Review**. *AA glovebox atlas Ireland*. **17**: 215-217.
- Fox, H. F. (1996) **Review**. *Marine algae of Northern Ireland*. **19**: 208-210.
- Fox, H. F. and Lonergan, J. (1993) *Pseudoplectania sphagnophila* (Pers.) Kreisel (**Ascomycotina**: Sarcosomataceae) in Ireland. **16**: 52-56.
- Fursov, V. (1995) A **review** of European **Chalcidoidea** (Hymenoptera) parasitizing the **eggs** of aquatic insects. **18**: 2-12.
- Fursov, V. N. and Pintureau, B. (1999) **Discovery** of *Trichogramma cacoeciae* Marchal (Hymenoptera: **Trichogrammatidae**) new to **England**, at Chelsea Physic Garden, London. **23**: 124-127.

G

- Gammell, M. P., Carlin, C. M., O'Connor, J. P., O'Connor, M. A. and Brophy, J. T. (2018) The **Window Winged** Sedge *Hagenella clathrata* (Kolenati, 1848) (**Trichoptera**: Phryganeidae) **confirmed** as an Irish species. **42**: 45-57.
- Gleed-Owen, C. P., Marnell, F., Monaghan, N. T. and Korky, J. K. (1999) **Origins** of the **Natterjack** Toad *Bufo calamita* Laurenti in Ireland: re-examination of subfossil bones from Carrowmore, Co. Sligo. **23**: 53-59.

- Good, J. (1990) **Review**. *Provisional atlas of the click beetles (Coleoptera: Elateroidea) of the British Isles*. **13**: 213-215.
- Good, J. (1991) **Review**. *In the field of the naturalists*. **14**: 254-256.
- Good, J. (2000) **Review**. *The ground beetles of Northern Ireland (Coleoptera – Carabidae)*. **24**: 183-185.
- Good, J. (2020) **Review**. *Atlas of water beetles of Britain and Ireland - smaller families of Polyphaga*. **44**: 270-271.
- Good, J. A. (1986) Invertebrates of Irish Midlands raised **bogs**: part IV. Notes on **terrestrial insects**. **9**: 2-9.
- Good, J. A. (1996) **Review**. *Insects, plants and set-aside*. **19**: 206-208.
- Good, J. A. (1999) Recolonisation by **Staphylinidae** (Coleoptera) of **lead mine** tailings at Silvermines, Co. Tipperary, Ireland. **23**: 128-140.
- Good, J. A. (2001) **Farms** as biogeographical units: 1. Habitats and faunal changes as influenced by farmer decision-making on a **mixed farm** in south Cork, Ireland. **25**: 220-247.
- Good, J. A. (2002) Size, isolation and **ancient** status in woodland: Staphylinidae, Carabidae and Lucanidae (Coleoptera) at **Rindoon Wood**, Co. Roscommon, Ireland. **26**: 182-195.
- Good, J. A. (2004) **Calcareous grassland** as a habitat for Staphylinidae (Coleoptera) in the Burren National Park, Co. Clare, Ireland. **28**: 147-162.
- Good, J. A. (2004) Lake-shore **fens** and **reedbeds** as a habitat for Staphylinidae and Carabidae (Coleoptera) in the East **Burren** area of Co. Clare, Ireland. **28**: 163-188.
- Good, J. A. (2005) Spring-fed **fen** as a habitat for Staphylinidae (Coleoptera) at **Pollardstown** Fen, Co. Kildare, Ireland, with an assessment of staphylinid sampling by Malaise traps. **29**: 213-241.
- Good, J. A. (2006) **Estuarine** riparian wetlands as a habitat for Staphylinidae and Carabidae (Coleoptera) on the Black Water tributary of the River Suir, Co. Kilkenny, Ireland. **30**: 92-113.
- Good, J. A. (2007) Old non-native **broadleaf** trees as a potential **biodiversity** resource in Irish woodlands: Staphylinidae (Coleoptera) from Ballyseedy Wood, Co. Kerry. **31**: 3-19.
- Good, J. A. (2009) Local and regional studies of **Cryptobiota**: esoteric stamp-collecting or essential ecology? **33**: 115-169.
- Good, J. A. (2011) Dispersal and colonisation by **rove-beetles** (Coleoptera: Staphylinidae) at a mine **tailings** grassland near Navan, Co. Meath, Ireland. **35**: 113-129.
- Good, J. A. (2013) Reassessment of early nineteenth century **Coleoptera** records from Ireland based on the **James Tardy** Collection in the **Dublin University** Zoological Museum. **37**: 115-159.

- Good, J. A. (2015) Effect of **soil type** on female mate choice and male **forceps** dimorphism in the **earwig** *Forficula auricularia* Linnaeus, 1758 (Dermaptera: Forficulidae) in Ireland. **39**: 193-202.
- Good, J. A. (2018) **Rove-beetles** (Coleoptera: Staphylinidae) collected by an ‘**autocatcher**’ near Clonmacnoise (County Offaly) and Killarney (County Kerry), Ireland. **42**: 173-187.
- Good, J. A. (2018) **Review**. *Atlas of the hydrophiloid beetles of Britain and Ireland*. **42**: 243-245.
- Good, J. A. (2019) **Winter** activity of **rove beetles** (Coleoptera: Staphylinidae) in fields and field margins in Ireland and **Denmark**. **43**: 133-145.
- Good, J. A. (2023) The ground layer of **alluvial forest** as a habitat for Staphylinidae and Carabidae (**Coleoptera**) at the **Gearagh** (County Cork), Ireland. **46**: 67-90.
- Good, J. A. and Anderson, R. (2017) Additions, deletions and corrections to the **Staphylinidae** in the Irish Coleoptera annotated list, with a revised **check-list** of Irish species. **41**: 178-234.
- Good, J. A. and Boxshall, M. (2014) Reassessment of early nineteenth century **Tardy records** in the **Dublin University** Zoological Museum: Part 2 (Coleoptera, Lepidoptera, Neuroptera and biographical note). **38**: 263-271.
- Good, J. A. and Butler, F. T. (1995) Woodland **polypore fungi** and other microhabitats of Staphylinidae (**Coleoptera**) at Powerscourt Demense, Co. Wicklow, Ireland. **18**: 22-29.
- Good, J. A. and Butler, F. T. (1996) **Ancient pasture** as a habitat for Staphylinidae (**Coleoptera**) at the Curragh, Co. Kildare, Ireland. **19**: 151-158.
- Good, J. A. and Butler, F. T. (1998) Coastal **lagoon** shores as a habitat for Staphylinidae and Carabidae (**Coleoptera**) in Ireland. **21**: 22-65.
- Good, J. A. and Butler, F. T. (1999) Recolonisation by Staphylinidae (**Coleoptera**) of copper mine **tailings** at Avoca and Berehaven mines, Ireland. **23**: 71-81.
- Good, J. A. and Butler, F. T. (2000) **Coastal** lagoon and saline lake shores as a habitat for Staphylinidae, Carabidae and Pselaphidae (**Coleoptera**) in Ireland: part 2. **24**: 111-141.
- Good, J. A. and Butler, F. T. (2001) **Turlough** pastures as a habitat for Staphylinidae and Carabidae (**Coleoptera**) in south-east Galway and north Clare, Ireland. **25**: 74-94.
- Good, J. A. and Butler, F. T. (2025) The **staphylinid** and **carabid** (Coleoptera) fauna of a restored *Molinia-Juncus acutiflorus* grassland in Co. Cork, Ireland. **48**: 246-263.
- Good, J. A. and Dorman, J. A. (2010) **Rove-beetles** (Coleoptera: Staphylinidae) from north-west **Galicia** compared with the Irish fauna: Lusitanian glacial refuge hypothesis not supported. **34**: 65-84.
- Good, J. A. and Dorman, J. A. (2020) Relative abundance of **rove-beetles** (Coleoptera: Staphylinidae) from grasslands and pastures in Ireland and **Galicia**, Spain. **44**: 205-235.

- Good, J. A. and Giller, P. S. (1990) Staphylinid beetles (**Coleoptera**) from cereal and grass **fields** in south-west Ireland. **13**: 2-22.
- Good, J. A. and Jagers op Akkerhuis, G. J. A. M. (2005) Interpreting **breeding habitat** from the presence of adults when Staphylinidae (**Coleoptera**) are used in biodiversity assessments. **29**: 194-212.
- Good, J. A. and O’Hanlon, A. (2023) Irish *Euplectus* (Coleoptera: **Staphylinidae**: Pselaphinae) from the Killarney area in the **E. F. Bullock** Collection. **46**: 41-47.
- Good, J. A. and Reynolds, J. D. (2018) Double **dimorphism** and **cyclolabial** male **earwigs** *Forficula auricularia* (L.) (Dermaptera: Forficulidae) from Foynes Island, Ireland. **42**: 159-172.
- Good, J. A. and Speight, M. C. D. (1991) Sites of international and national **importance** for invertebrate fauna – a definition proposed for use in **site surveys**. **14**: 48-53.
- Good, J. A. and Wistow, S. (1997) Recolonisation by Staphylinidae (**Coleoptera**) of restored **meadows** on rehabilitated cement **kiln mounds** near Drogheda, Co. Louth, Ireland. **20**: 127-135.
- Good, J. A., †Withers, P. and Gittings, T. (2021) **Psychodidae** (Diptera) as indicators of the effects of the lined Kildare **bypass** motorway on tufa spring habitat at **Pollardstown Fen**, Ireland. **45**: 77-96.
- Gray, N. F. (1984) The distribution of predatory and endoparasitic **nematophagous fungi** in Ireland. **7**: 19-37.
- Gray, N. F. (1985) Ecological consequences of *Amblystegium riparium* growing on a **sewage** works percolating filter. **8**: 26-29.

H

- Hackney, P. (1994) **Review**. *Trees of Ireland, native and naturalised*. **17**: 221-222.
- Hackney, P. (1995) The **Flora** of the **North-East** of Ireland – supplementary notes. **18**: 148-175.
- Hackney, P. (1997) **Review**. *Alien grasses of the British Isles*. **20**: 297-298.
- Hackney, P. (1998) **Review**. *Urban Flora of Belfast*. **22**: 237-238.
- Hackney, P. (2007) **Review**. Illustrations of alien plants of the British Isles. **31**: 409-410.
- Hancock, E. G. (1990) Some **crane fly** (Diptera: Tipulidae, Anisopodidae, Ptychopteridae) records from **Kerry**, Ireland, 1982. **13**: 137-140.
- Hannigan, E., Kelly-Quinn, M. and O’Connor, J. P. (2009) **Notable** caddisflies (**Trichoptera**) from **Scragh Bog**, Co. Westmeath, including *Erotesis baltica* McLachlan new to Ireland. **33**: 76-80.

- Harding, P. T. (1977) **Submitting specimens** of invertebrates for identification – a recipient's viewpoint. **1**: 50-52.
- Hatch, P. and Healy, B. (1998) Aquatic **vegetation** of Irish coastal **lagoons**. **21**: 2-21.
- Healy, B. and Oliver, G. A. (1998) Irish coastal **lagoons**: summary of a survey. **21**: 116-150.
- Helden, A., Anderson, A. and Purvis, G. (2008) Arthropod biodiversity of agricultural **grassland** in south and east Ireland: **Hemiptera**. **32**: 160-171.
- Helden, A., Anderson, A. and Purvis, G. (2008) Arthropod biodiversity of **agricultural grassland** in south and east Ireland: **Coleoptera**. **32**: 172-200.
- Higgins, D. G. (1985) **Invertebrates** of Irish Midlands **raised bogs**: part I. Araneae, Opiliones, Chilopoda. **8**: 91-97.
- Holmes, J. M. C. (1978) *Gammarus duebeni* (Crustacea: **Amphipoda**) in Ireland. **2**: 45-48.
- Holmes, J. M. C. (1980) Some **crustacean** records from Lough **Ine**, Co. Cork. **4**: 33-40.
- Holmes, J. M. C. (1983) Further **crustacean** records from Lough **Ine**, Co. Cork. **5**: 19-24.
- Holmes, J. M. C. (1984) Some freshwater **crustacean** records from the **Royal Canal**, Ashtown, Co. Dublin. **7**: 55.
- Holmes, J. M. C. (1985) **Crustacean** records from Lough **Ine**, Co. Cork: part III. **8**: 19-25.
- Holmes, J. M. C. (1986) Notes on some **crustaceans** from **Galway Bay**. **9**: 34-40.
- Holmes, J. M. C. (1987) **Crustacean** records from Lough Hyne (**Ine**), Co. Cork, Ireland: part IV. **10**: 99-106.
- Holmes, J. M. C. (1991) **Crustacean** records from Lough Hyne (**Ine**), Co. Cork, Ireland: part V. **14**: 73-83.
- Holmes, J. M. C. (1996) **Crustacean** records from Lough Hyne (**Ine**), Co. Cork, Ireland: part VI. **19**: 139-147.
- Holmes, J. M. C. (1998) A **checklist** of the **Siphonostomatoida** (Crustacea: Copepoda) of Ireland. **22**: 194-228.
- Holmes, J. M. C. (2001) A **checklist** of the **Calanoida** and the smaller copepod orders (Crustacea: Copepoda) of Ireland. **25**: 7-73.
- Holmes, J. M. C. (2002) **Crustacean** records from Lough Hyne (**Ine**), Co. Cork, Ireland: part vii. **26**: 3-13.
- Holmes, J. M. C. (2007) Some **distributional** records for Irish **Amphipoda**. **31**: 48-100.
- Holmes, J. M. C. (2008) **Crustacean** records from Lough Hyne (**Ine**), Co. Cork, Ireland: part viii. **32**: 62-68.
- Holmes, J. M. C. (2010) **Crustacean** records from Lough Hyne (**Ine**), Co. Cork, Ireland: part ix. **34**: 102-107.
- Holmes, J. M. C. and Gotto, R. V. (1992) A **list** of the **Poecilostomatoida** (Crustacea: Copepoda) of Ireland. **15**: 2-33.

- Holmes, J. M. C. and Gotto, R. V. (2000) A **checklist** of the **Cyclopoida** (Crustacea: Copepoda) of Ireland. **24**: 2-42.
- Holmes, J. M. C. and Minchin, D. (1995) Parasitic **Copepoda** associated with **teleosts** in Killary Harbour, Ireland. **18**: 13-18.
- Holmes, J. M. C. and Minchin, D. (1999) *Pseudonychocamptus carthyi* Hamond (Crustacea: Copepoda: **Harpacticoida**) **new** to Ireland. **23**: 141-142.
- Holmes, J. M. C. and O'Connor, J. P. (1990) A provisional **list** of the **Harpacticoida** (Crustacea: Copepoda) of Ireland. **13**: 44-130.
- Holmes, J. M. C. and O'Connor, J. P. (2013) Records of **marine sand-dwelling copepods** (Crustacea) from Galway Bay, including eight species **new** to Ireland. **37**: 3-11.
- Hudson, A. V. and Reynolds, J. D. (1985) Distribution of Irish **intertidal Talitridae**. **8**: 63-77.

J

- Johnson, A. C. (2001) **Lepidoptera** in 1997 at **Kilcolman** National Nature Reserve, Co. Cork, Ireland. **25**: 105-134.

K

- Kavanagh, F. A. (2009) A **catalogue** of the **Asellota** (Crustacea: Isopoda) off the west coast of Ireland and Britain, from 100-5000m. **33**: 14-75.
- Keatinge, M. J. (1989) A **new** Irish location for *Gammarus pulex* (L.) (Crustacea: Amphipoda). **12**: 153-154.
- Kelly-Quinn, M. (1993) Further records of *Ameletus inopinatus* Eaton (**Ephemeroptera**) in **upland** streams in Co. Wicklow, Ireland. **16**: 30-31.
- Kibichii, S., Baars, J.-R., Kelly-Quinn, M. and Holmes, J. M. C. (2010) *Parastenocaris phyllura*, Kiefer, 1938 (**Copepoda**: Harpacticoida: Parastinocarididae), a species **new** to Ireland with a few notes on possible habitat preferences. **34**: 97-101.
- Kirby, N., Lockhart, N. and Synnott, D. (1980) **Bryological** observations at **Gleniff**, County Sligo (H28). **4**: 30-32.
- Kirby, P. (1991) **Hemiptera** (Heteroptera and Auchenorrhyncha) recorded from **south-west** Ireland (Cos Cork, Kerry and Clare), September 1989. **14**: 90-104.
- Knight, G. T. (2004) *Kaliofenusa pusilla* (Serville, 1823) (Hymenoptera: Tenthredinidae), species of leaf-mining **sawfly new** to Ireland. **28**: 61-62.
- Korky, J. K. (2008) Notes on the 2007 **breeding** season of the **natterjack** toad *Epidalea calamita* Laurenti (Anura: Bufonidae) in Ireland. **32**: 21-33.
- Korky, J. K. (2011) 2011 **natterjack** toad (*Epidalea calamita* Laurenti, 1768) **breeding** habitat survey, North Dingle Peninsula, Co. Kerry, Ireland. **35**: 10-20.

- Korky, J. K. and Smallwood, J. A. (2006) Morphological **variation** near range ends of larvae of the **natterjack** toad *Bufo calamita* Laurenti (Anura: Bufonidae) in Ireland and **Poland**. **30**: 11-27.
- Korky, J. K. and Webb, R. G. (1993) **Breeding** habitats of the **common frog**, *Rana temporaria* L. (Anura: Ranidae), in the Republic of Ireland. **16**: 18-29.
- Korky, J. K. and Webb, R. G. (1996) Morphological **variation** in larvae of *Rana temporaria* L. (Anura: Ranidae) in the Republic of Ireland. **19**: 159-181.
- Korky, J. K. and Webb, R. G. (1999) **Resurvey**, biogeography and **conservation** of the **Natterjack** Toad *Bufo calamita* Laurenti (Anura: Bufonidae) in the Republic of Ireland. **23**: 2-52.
- Korky, J. K. and Webb, R. G. (2001) Geographic **variation** in larvae of *Bufo calamita* Laurenti (Anura: Bufonidae) in the Republic of Ireland. **25**: 144-169.

L

- Langton, P. H. (2002) A preliminary **survey** of the non-biting midges (Diptera: **Chironomidae**) of **Northern Ireland**. **26**: 14-28.
- Langton, P. H., Murray, D. A. and Mantell, A. (2023) **First** record of *Chironomus* (*Chaetolabis*) **macani** Freeman, 1948 (Diptera: **Chironomidae**) in Ireland from Killarney, County Kerry. **46**: 121-123.
- Legg, G. and O'Connor, J. P. (1997) A **review** of the Irish **Pseudoscorpions** (Arachnida: Pseudoscorpiones). **20**: 105-126.
- Lennon, N., Aldwell, B., Hardiman, D., Nash, D. and Smyth, F. (2013) **Confirmation** of the presence of the **small skipper** butterfly *Thymelicus sylvestris* (Poda, 1761) (Lepidoptera: Hesperiiidae) in Ireland. **37**: 17-19.
- Levinge, D. E. S. (1977) **Athlone Field** Meeting: a general description of L. Ree and surround. **1**: 4-6.
- Levinge, D. E. S. (1977) **Athlone Field** Meeting: Hare Island, L. Ree. **1**: 6-9.
- Little, R. and O'Connor, J. P. (2024) Records of **Trichoptera** collected for the **biomonitoring** of Ireland's lake network 2013-2018 and 2019-2021. **47**: 131-154.
- Little, R. and O'Connor, J. P. (2025) Records of **Trichoptera** collected for the **biomonitoring** of Ireland's lake network 2022-2024. **48**: 183-190.
- Lockhart, N. D. (1987) **Bryophyte** field meeting to **Pollardstown Fen**, Co. Kildare, 3rd May 1986. **10**: 141-144.
- Lott, D. A. and Bilton, D. T. (1991) Records of **Coleoptera** from Irish **wetland** sites in 1989. **14**: 60-72.

- Lucey, J. (1994) Records of the **Giant Hogweed**, *Heracleum mantegazzianum* Sommier and Levier, along southern Irish rivers and streams with a revised **distribution** map for the region. **17**: 2-6.
- Lucey, J. (1999) A **chronological** account of the **crayfish** *Austropotamobius pallipes* (Lereboullet) in Ireland. **23**: 143-161.
- Luff, M. L. (1977) Ground **beetle** collecting in the **Dublin** Area. **1**: 44-46.
- Luxton, M. (1998) The oribatid and parasitiform **mites** of Ireland, with particular reference to the work of **J. N. Halbert** (1872-1948). **22**: 2-72.
- Lynch, J. M., Byrne, C. F. and Bowman, J. J. (1995) *Ameletus inopinatus* and other **Ephemeroptera** from Glenveagh National Park, Co. Donegal, Ireland. **18**: 30-36.

M

- Maki, A. M. (2010) Aquatic **macroinvertebrate** biodiversity of an Irish constructed **wetland** system, two years after **construction**. **34**: 128-138.
- Mantell, A. and Clabon, T. (2019) The '**Garden Centre Spider**' *Uloborus plumipes* (Lucas, 1846) (Araneae: Uloboridae) **new** to Ireland. **43**: 17-18.
- Marnell, F. (1998) The **distribution** of the **smooth newt**, *Triturus vulgaris* L., in Ireland. **22**: 84-96.
- Marnell, F. (1999) The **distribution** of the **common frog** *Rana temporaria* L. in Ireland. **23**: 60-70.
- Marnell, F. (2002) The **distribution** and habitat of the **common lizard**, *Lacerta vivipara* Jacquin, in Ireland. **26**: 75-82.
- McCormack, S., Nolan, M. and Regan, E. (2006) **Coleoptera**, **Araneae**, and aquatic **Hemiptera** recorded from three **mountain areas** in northwestern Ireland. **30**: 302-333.
- McCormack, S., Regan, E., Nolan, M. and Anderson, R. (2009) **Coleoptera** from montane **blanket bog** in the Wicklow Mountains, Ireland. **33**: 81-98.
- McDonnell, R. J., Fahy, O. L. and Gormally, M. J. (2002) Ground beetle (**Coleoptera**: Carabidae) and plant communities of Atlantic **blanket bog** in Connemara, Ireland. **26**: 83-105.
- McDonnell, R. J., Williams, C. D., Shine, O., Knutson, L. and Gormally, M. J. (2010) Faunistics data for **Sciomyzidae** (Diptera) in the west of Ireland with **distribution** maps, species accounts and comments on **community** structure. **34**: 150-218.
- McFerran, D. M. and Ross, H. C. G. (1993) **Checklist** of the **spiders** of Ireland. **16**: 32-51.
- McGough, H. N. (1984) **Field** trip to the **Gearagh**, Macroom, Co. Cork 19-21 August, 1983. **7**: 55-57.

- McGough, H. N. (1985) **Field** meeting to the **Ballyeighter Loughs**, Corrofin, Co. Clare, 29 June – 2 July, 1984. **8**: 118-119.
- McGrath, D. (1984) Symposium on **involuntary transport** of plants and animals, Galway, April, 1983. Marine invertebrates. **7**: 60.
- McGrath, D. and King, P. (1992) The **immigrant barnacle**, *Elminius modestus* Darwin, in **Galway** Bay, Ireland. **15**: 63-67.
- McGuire, C. and Marnell, F. (2000) The present **status** of the **slow-worm**, *Anguis fragilis* L., in Ireland. **24**: 69-74.
- McHugh, R. (1986) The Irish **distribution** of the **myxomycete** *Clastoderma pachypus* Nann. – Brem. **9**: 10-14.
- McHugh, R. (1995) **Myxomycete** records from the new survey of **Clare Island**, Co. Mayo, Ireland. **18**: 132-135.
- McLoughlin, N., Reynolds, J., Lucey, J. and McGarrigle, M. (2000) The **biogeography** and current status of *Gammarus duebeni* Liljeborg and *Gammarus pulex* (L.) (Crustacea, Amphipoda) in freshwater in the Republic of Ireland. **24**: 142-152.
- McMillan, N. and Zeissler, H. (1990) **Recent** and **fossil Mollusca** of the Rivers Barrow, Nore and Suir, South-East Ireland. **13**: 189-199.
- McNally, A. (1987) Studies on the **Murrough**, Co. Wicklow, Ireland. 1: the **chemistry** and **phytoplankton** of pools. **10**: 28-34.
- McNally, A. (1988) **Review**. *Flora of Lough Neagh*. **11**: 114-115.
- McNally, A. and Heslin, M. C. (1986) A **fungal** foray to **Knockree** Wood, Co. Wicklow (O 1916), 21 September 1985. **9**: 63-64.
- Minchin, D. (2003) The **Zebra Mussel** *Dreissena polymorpha* (Pallas) extends its range **westwards** in Ireland. **27**: 176-182.
- Minchin, D. and Costello, M. J. (1996) The **fishes** of **Mulroy** Bay, north-west Ireland. **19**: 2-14.
- Minchin, D., Dodd, D., Lucy, F. and Levine, I. (1998) Is *Viviparus viviparus* (Linnaeus) (Gastropoda: Prosobranchia) a **native** species of Ireland? **22**: 229-234.
- Mineo, G., O'Connor, J. P. and Ashe, P. (2010) Observations on *Thoron metallicum* and *Teleas medon* (Hymenoptera: Platygastroidea, Scelionidae) in the **Haliday Collection**, National Museum of Ireland. **34**: 139-149.
- Monahan, C. and Caffrey, J. M. (1996) *Macroplea appendiculata* (Coleoptera) in the **Royal and Grand Canals**: a rarity or an overlooked species in Ireland. **19**: 182-188.
- Monahan, E. C. and Spillane, M. C. (1984) Symposium on **involuntary transport** of plants and animals, Galway, April, 1983. **Ocean currents**. **7**: 59-60.
- Moorkens, E. (2006) Irish **non-marine molluscs** – an evaluation of species threat status. **30**: 348-371.

- Moorkens, E. and Speight, M. C. D. (2001) The **CLECOM** Project List of Irish **non-marine Mollusca**. **25**: 95-104.
- Moorkens, E. A. (2004) **Non-marine Mollusca**: new and notable records for Ireland. **28**: 189-198.
- Moorkens, E. A. and Killeen, I. J. (2005) The **aquatic mollusc** fauna of the **Grand and Royal Canals**, Ireland. **29**: 143-193.
- Morgan, D. and Murray, D. A. (1988) Five **Chironomidae** (Diptera) **new** to Ireland. **11**: 95-99.
- Moriarty, C. (2006) Memoir. **Arthur Went** 1910-1980. **30**: 372-379.
- Morris, M. G. (1987) **New** vicecounty records of **weevils** (Coleoptera: Curculionoidea) from Ireland. **10**: 124-136.
- Morris, M. G. (1997) **New** records of Irish **weevils** (Insecta, Coleoptera, Curculionoidea). **20**: 155-178.
- Morris, M. G. and O'Connor, J. P. (1992) **New** records of **weevils** (Coleoptera: Curculionidae) from various Irish vice-counties. **15**: 110-114.
- Morton, O. (2003) The **marine Macroalgae** of County Donegal, Ireland. **27**: 3-164.
- Mothersill, C. (1977) Irish Biological **Records Centre** Open Day. **1**: 47-48.
- Mothersill, C. (1978) Progress **report** on the **recording schemes** for harvestmen, false-scorpions and centipedes. **2**: 49-54.
- Moubayed-Breil, J. and Ashe, P. (2018) *Micropsectra oksanae* sp. n., a **new crenophilous species** inhabiting karstic springs and streams in south-eastern **France** (Diptera: Chironomidae, Tanytarsini). **42**: 191-202.
- Moubayed-Breil, J. and Ashe, P. (2018) *Micropsectra alyssae* sp. n. and *M. ekremi* sp. n., **two new species** inhabiting glacial springs and peat bogs in the eastern Pyrenees, **France** (Diptera: Chironomidae, Tanytarsini). **42**: 203-224.
- Murray, D. A. (1996) Records of **Chironomidae** (Diptera) in Ireland: twenty-nine species **new** to the Irish fauna. **19**: 195-201.
- Murray, D. A. (1999) Two marine coastal-dwelling **Chironomidae** (Diptera) **new** to the fauna of **Iceland**: *Telmatogeton japonicus* Tokunaga (Telmatogetoninae) and *Chunio marinus* Haliday (Orthoclaadiinae). **23**: 89-91.
- Murray, D. A. (2006) *Conchapelopia hittmairorum* Michiels and Spies, 2002 (Diptera: **Chironomidae**, Tanypodinae) **new** to the Irish faunal checklist. **30**: 7-10.
- Murray, D. A. (2010) Records of **Chironomidae** (Diptera) in Ireland - twenty **additions** and notes on four **morphotypes**. **34**: 85-96.
- Murray, D. A. (2012) **First** record for Ireland of *Metriocnemus* (*Inermipupa*) *carmencitabertarum* Langton and Cobo, 1997 (Diptera: **Chironomidae**, Orthoclaadiinae). **36**: 3-7.

- Murray, D. A. (2012) Four **Chironomidae** (Diptera) **new** to Ireland in the Subfamilies Orthocladiinae and Chironominae and a new site record for *Parochlus kiefferi* (Garrett, 1925) (Podonominae). **36**: 8-14.
- Murray, D. A. (2013) Supplementary records of *Metriocnemus* (*Inermipupa*) *carmencitabertarum* Langton and Cobo, 1997 (Diptera: **Chironomidae**) in Ireland with some observations on **larval behaviour**. **37**: 204-207.
- Murray, D. A. (2014) **First** records of halophilic **Chironomidae** (Diptera) from Lanzarote including *Chunio marinus* Haliday (Orthocladiinae) new to the **Canary Islands**. **38**: 247-250.
- Murray, D. A. (2015) Records of **Chironomidae** (Diptera) from County **Meath** including *Rheotanytarsus reissi* Lehmann, 1970 (Tanytarsini) **new** to Ireland. **39**: 3-6.
- Murray, D. A. (2015) Two **marine** Orthocladiinae (Diptera: **Chironomidae**) from the **Algarve** - **first** records of *Halocladus* (*Halocladus*) *millenarius* and *Thalassosmittia thalassophila* for Portugal. **39**: 209-211.
- Murray, D. A. (2016) An annotated **inventory** of the **Chironomidae** (Insecta: Diptera) of County **Meath**, Ireland. **40**: 18-42.
- Murray, D. A. (2016) Records of some **freshwater** and **halobiontic Chironomidae** (Insecta: Diptera) from County **Cork**, Ireland. **40**: 125-130.
- Murray, D. A. (2017) Some **Chironomidae** (Insecta, Diptera) from south east Ireland - **new** and additional records for County **Wexford** and hydrometric areas 11 and 12. **41**: 22-32.
- Murray, D. A. (2017) The **Chironomidae** (Insecta, Diptera) of **Achill Island**, County Mayo - **new** records and checklist. **41**: 90-102.
- Murray, D. A. (2018) Further distribution records of **Chironomidae** (Insecta: Diptera) in Ireland from **past** collections. **42**: 58-74.
- Murray, D. A. (2019) **New** county and hydrometric area records of **Chironomidae** (Insecta: Diptera) in Ireland from recent and past collections. **43**: 19-27.
- Murray, D. A. (2019) Records and a **checklist** of **Chironomidae** (Insecta: Diptera) in County **Louth** and an updated summary of species distribution in Ireland. **43**: 42-56.
- Murray, D. A. (2020) Additional records of **Chironomidae** (Insecta: Diptera) in Ireland with **new** records from Counties Longford, Mayo and Meath. **44**: 124-137.
- Murray, D. A. (2021) Additional records of **Chironomidae** (Diptera, Insecta) in Ireland with **new** county records from Donegal and Meath. **45**: 3-10.
- Murray, D. A. (2023) Recent records of **Chironomidae** (Insecta: Diptera) in Ireland from Counties Dublin, Kildare and Meath and a brief numerical update of the Irish **checklist**. **46**: 109-120.

- Murray, D. A. (2024) Further records of **Chironomidae** (Insecta: Diptera) in Ireland from recent and **past** collections. **47**: 195-206.
- Murray, D. A. (2024) *Corynoneura collaris* Makarchenko & Makarchenko, 2010 (Diptera: **Chironomidae**: Orthocladiinae) **new** for Ireland. **47**: 207-210.
- Murray, D. A. (2025) **First** records of *Corynoneura lobata* Edwards, 1924 and *Micropsectra lindrothi* Goetghebuer, 1931 in County Kildare and of *Cricotopus sylvestris* (Fabricius, 1794) in hydrometric area 8, Ireland (Insecta: Diptera, **Chironomidae**). **48**: 264-266.
- Murray, D. A. and Ashe, P. J. (2017) Additional distribution records of **Chironomidae** (Insecta: Diptera) in Ireland from recent and **past** collections. **41**: 112-129.
- Murray, D. A. and Baars, J. R. (2006) Four **Chironomidae** (Diptera, Insecta) **new** to Ireland from remote **upland lakes**. **30**: 298-301.
- Murray, D. A. and Langton, P. H. (2018) Doubt and certainty in records of *Micropsecta recurvata* Goetghebuer (Insecta: Diptera: **Chironomidae**) in Ireland. **42**: 155-158.
- Murray, D. A., Langton, P. H., O'Connor, J. P. and Ashe, P. J. (2013) **Distribution** records of Irish **Chironomidae** (Diptera): Part 1 - Buchonomyiinae, Podonominae, Tanypodinae, Telmatogetoninae, Diamesinae and Prodiamesinae. **37**: 208-336.
- Murray, D. A., Langton, P. H., O'Connor, J. P. and Ashe, P. J. (2014) **Distribution** records of Irish **Chironomidae** (Diptera): Part 2 – Orthocladiinae. **38**: 61-246.
- Murray, D. A., Langton, P. H., O'Connor, J. P. and Ashe, P. J. (2015) **Distribution** records of Irish **Chironomidae** (Diptera): Part 3 – Chironominae. **39**: 7-192.
- Murray, D. A., Langton, P. H., O'Connor, J. P. and Ashe, P. J. (2017) Corrections of grid reference for three sites in **distribution** records of Irish **Chironomidae** (Diptera), parts 1-3. **41**: 130-133.
- Murray, D. A. and Murray, W. A. (2003) A reassessment of **Chironomidae** (Diptera) of **Clare Island**, Co. Mayo, with first records of *Acamptocladius reissi* Cranston and Saether and *Limnophyes angelicae* Saether (Orthocladiinae) for the Irish faunal checklist. **27**: 255-269.
- Murray, D. A. and Murray, W. A. (2006) Notes on six **Chironomidae** (Diptera, Insecta) **new** to Ireland from Co. **Mayo**. **30**: 293-297.
- Murray, D. A. and O'Connor, J. P. (2018) **Distribution** records of **Chironomidae** (Insecta: Diptera) in Ireland from recent collections. **42**: 34-44.
- Murray, D. A. and O'Connor, J. P. (2023) In memoriam **Dr Patrick Ashe (1954-2022)**. **46**: 3-25.
- Murray, D. A. and O'Connor, J. P. (2025) **Replacement names** for three species of *Chironomus* Meigen (Diptera, Chironomidae). **48**: 267-269.

- Murray, D. A., O'Connor J. P. and Ashe, P. (1999) **Obituary: Carmel F. Humphries** Ph.D., D.Sc., M.R.I.A. (1909-1986). **23**: 162-164.
- Murray, D. A., O'Connor, J. P. and Ashe, P. J. (2016) A contribution to the **Fauna Europea** database - additions and amendments to the inventory of Irish **Chironomidae** (Diptera: Insecta) from the Republic of Ireland and Northern Ireland. **40**: 131-141.
- Murray, D. A., O'Connor, J. P., Langton, P. H. and Ashe, P. J. (2020) Amendments and clarification of some site details in **distribution** records of Irish **Chironomidae** (Diptera), Parts 1 - 3. **44**: 167-177.
- Murray, W. A. and Murray, D. A. (2003) **First record of *Ophrydium versatile*** (Müller), a colonial **peritrich ciliate** (Protista), from Clare Island, Co. Mayo, Ireland. **27**: 183-186.

N

- Nash, D. (1998) **Review**. *Dandelions of Great Britain and Ireland*. **22**: 238-239.
- Nash, D. (2003) **Review**. *The Flora of County Cavan*. **27**: 281-283.
- Nash, D. and Hardiman, D. (2013) The **juniper shieldbug** *Cyphostethus tristriatus* (Fabricius, 1787) (Hemiptera: Acanthosomatidae) in Ireland. **37**: 160-164.
- Nash, D. W. (1993) **Review**. *A checklist Flora of North Tipperary, Ireland*. **16**: 62-144.
- Nash, D. W. (1994) **Review**. *Wild plants of the Phoenix Park*. **17**: 217-221.
- Nash, D. W. (1996) **Review**. *Pondweeds of Great Britain and Ireland*. **19**: 202-204.
- Nash, R. (1979) A **checklist** of Irish **Fanniidae** and **Muscidae** (Diptera). **3**: 11-17.
- Nash, R. (1979) A **checklist** of Irish **Tachinidae** (Diptera). **3**: 30-33.
- Nash, R. and O'Connor, J. P. (2011) Notes on the Irish entomologist **Alexander Henry Haliday** (1806-1870). **35**: 64-112.
- Nash, R., O'Connor, J. P. and. Chandler, P. J. (2001) The Irish species of **lesser dung flies** (Insecta: Diptera, **Sphaeroceridae**) including a list of **type** specimens described by Alexander Henry **Haliday** in Humboldt University Museum, La Specola and the National Museum of Ireland. **25**: 180-210.
- Nelson, B. (1995) The **distribution** of the aquatic and semi-aquatic **Heteroptera** in **Northern Ireland**. **18**: 66-130.
- Nelson, B. (2005) **Surveys** of the insects, spiders and other **invertebrates of fens** in Counties Armagh, Down and Tyrone, **Northern Ireland**. **29**: 3-85.
- Nelson, B., Foster, G., Weyl, R. and Anderson, R. (1997) The **distribution** of **aquatic Coleoptera** in **Northern Ireland**. Part 1: Families Haliplidae, Hygrobiidae, Noteridae, Dytiscidae and Gyrinidae. **20**: 179-296.

- Nelson, B., Foster, G., Weyl, R. and Anderson, R. (1998) The **distribution** of **aquatic Coleoptera** in **Northern Ireland**. Part 2: Families Hydraenidae, Helophoridae, Hydrochidae, Hydrophilidae, Elmidae and Dryopidae. **22**: 128-193.
- Nelson, B., Northridge, R. and Rippey, I. (1989) The **Odonata** (Insecta) of Co. **Fermanagh**, Ireland. **12**: 113-134.
- Nelson, B., Walsh, J. and Foster, G. (2007) Finding jewels amongst the reeds: a **review** of the Irish **donaciinae beetles** (Coleoptera: Chrysomelidae). **31**: 117-193.
- Nelson, E. C. (1996) **Review**. *Alien plants of the British Isles. A provisional catalogue of vascular plants (excluding grasses)*. **19**: 204-206.
- Nelson, E. C. (1979) Records of the Irish **flora** published **before 1726**. **3**: 51-74.
- Nelson, E. C. (1991) **Review**. *Heather in England and Wales*. **14**: 256-257.
- Nolan, M. (2000) A provisional list of **spiders** (Araneae) from **Lesley Gibson's** survey (1979-1982) of **Carnsore Point**, Co. Wexford, including one species **new** to Ireland, *Maro minutus* (O. P.- Cambridge, 1906) (Linyphiidae). **24**: 159-167.
- Nolan, M. (2002) **Spiders** (Araneae) of montane blanket **bog** in County Wicklow, Ireland. **26**: 39-59.
- Nolan, M. (2002) **Uncommonly** recorded **spiders** (Araneae) from Ireland, including one species **new** to the country. **26**: 154-160.
- Nolan, M. (2004) Early records of Irish **spiders**: two species deleted, two clarifications and **type** material of *Erigone welchi* Jackson, 1911 (Araneae). **28**: 233-243.
- Nolan, M. (2007) Two **spiders** (Araneae) **new** to Ireland from **raised bog**: *Hypsosinga albobittata* (Westring) (Araneidae) and *Minicia marginella* (Wider) (Linyphiidae). **31**: 101-106.
- Nolan, M. (2007) A brief assessment of the **spiders** (Araneae) of **Lodge Bog**, Co. Kildare, Ireland. **31**: 107-116.
- Nolan, M. (2008) **First** records of three **spider** species in Ireland (Araneae): *Glyphesis cottonae* (La Touche), *Mioxena blanda* (Simon) (Linyphiidae) and *Segestria florentina* (Rossi) (Segestriidae). **32**: 132-141.
- Nolan, M. (2009) *Walckenaeria alticeps* (Denis, 1952) (Araneae: Linyphiidae) – **new** to Ireland from two **raised bogs** in Co. Offaly. **33**: 174-183.
- Nolan, M. (2011) **First** Irish record of *Talavera aequipes* (O. P.-Cambridge, 1871) (**Arachnida**, Araneae, Salticidae), from a **raised bog** in Co. Offaly. **35**: 3-9.
- Nolan, M. (2012) First Irish record of *Episinus maculipes* Cavanna, 1876 (Araneae, Theridiidae). **36**: 26-32.
- Nolan, M. (2013) **First** Irish records of *Theridion hemerobius* Simon, 1914 (Araneae: Theridiidae). **37**: 45-55.

- Nolan, M. (2013) **Spiders** (Araneae) of Irish **raised bogs**: Clara Bog, Co. Offaly and Carrowbehy Bog, Co. Roscommon. **37**: 172-203.
- Nolan, M. (2014) **First** Irish records of *Crustulina guttata* (Wider) with notes on Irish occurrences of *Crustulina sticta* (O.P.-Cambridge) (Araneae: Theridiidae). **38**: 285-290.
- Nolan, M. (2015) *Carabus nitens* L. (Coleoptera: Carabidae) in the south of Ireland: recent and historical records. **39**: 243-251.
- Nolan, M. (2015) **Alfred Furlong**: a nineteenth century Irish **entomologist**. **39**: 252-274.
- Nolan, M. (2016) Records of some **rare** and uncommon Irish **spiders** (Arachnida: Araneae). **40**: 142-163.
- Nolan, M. (2017) **First** Irish records of the **cream-streaked ladybird** *Harmonia quadripunctata* (Pontoppidan, 1763) (Coleoptera: Coccinellidae). **41**: 134-139.
- Nolan, M. (2018) Evidence that the **cream-streaked ladybird** *Harmonia quadripunctata* (Pontoppidan, 1763) (Coleoptera: Coccinellidae) is **breeding** in Ireland. **42**: 188-190.
- Nolan, M. (2020) Notes on ‘Irish’ **spiders** (Arachnida): *Atypus affinis* Eichwald (Atypidae) and *Entelecara errata* O. P.-Cambridge (Linyphiidae) removed from the Irish list; *Cryptachaea blattea* (Urquhart) (Theridiidae) **new** to Ireland. **44**: 189-204.
- Nolan, M. (2021) A **third** county record of the caddisfly *Hagenella clathrata* (Kolenati) (Phryganeidae: **Trichoptera**) from Ireland. **45**: 41-46.
- Nolan, M. (2021) **First** Irish record of *Micaria micans* (Blackwall) (Araneae, Gnaphosidae) and revalidation of *Micaria pulicaria* (Sundevall). **45**: 56-61.
- Nolan, M. (2025) **First** Irish records of the **seed-beetle** *Harpalus (Amblystus) honestus* (Duftschmid, 1812) (Coleoptera: Carabidae) from **Skellig Michael**, Páirc Náisiúnta na Mara, Co. Kerry. **48**: 270-279.
- Nolan, M. and Doe, J. (2023) The **Green-jawed Tube Spider** *Segestria florentina* (Rossi) (Araneae: Segestriidae) is **established** in Ireland. **46**: 124-133.
- Nolan, M. and Foster, S. (2024) **First** Irish records of *Theridion pictum* (Walckenaer, 1802) (Araneae, Theridiidae) from Counties Armagh and Antrim. **47**: 155-162.
- Nolan, M. and McCormack, S. (2004) **First** Irish record of *Meioneta mossica* Schikora, 1993 (Araneae, Linyphiidae). **28**: 204-206.
- Nolan, M. and O'Reilly, A. (2021) The **first** Irish record of *Porrhomma microphthalmum* (O.P.- Cambridge) *sensu stricto* (Araneae: Linyphiidae). **45**: 35-40.
- Nolan, M. and Regan, E. C. (2008) *Drassodes pubescens* (Thorell) (Araneae, Gnaphosidae): a **spider new** to Ireland from calcareous grassland. **32**: 128-131.
- Nolan, M. and Voss, S. (2025) The vouched, the unvouched and a digital phantom; four **spiders** (Araneae) published for, but **not occurring** in Ireland. **48**: 280-286.
- Norton, M. (1999) **Review**. *Plant Crib 1998*. **23**: 167-168.

- Norton, M. (2025) An annotated checklist of *Carex* L. (sedge) species in Co. **Meath** (H22), Ireland. **48**: 228-245.
- Nunn, J. D. (1994) The **marine Mollusca** of Ireland 1. Strangford Lough, Co. **Down**. **17**: 23-214.
- Nunn, J. D. (1996) The **marine Mollusca** of Ireland 2. Mulroy Bay, Co. **Donegal**. **19**: 15-138.
- Nunn, J. D., Minchin, D. and Picton, B. E. (2006) The **marine Mollusca** of Ireland 3. **Lough Hyne**, Co. Cork. **30**: 114-292.

O

- O'Connor, J. P. (1979) James Nathaniel **Halbert**: his **mss** in the National Museum of Ireland **3**: 3-6.
- O'Connor, J. P. (1980) William Frederick **Johnson**: notes on his entomological **collection** and **mss** housed in the National Museum of Ireland. **4**: 46-49.
- O'Connor, J. P. (1983) Notes on **insect pests** received for identification by the National Museum of Ireland. **5**: 5-14.
- O'Connor, J. P. (1984) Notes on **insect pests** received for identification by the National Museum of Ireland: a second report. **7**: 38-44.
- O'Connor, J. P. (1985) Notes on **planktonic Crustacea** and **Hydacarina** from two Irish lakes. **8**: 119-120.
- O'Connor, J. P. (2001) **Review**. *A guide to the dragonflies of Ireland*. **25**: 309.
- O'Connor, J. P. (2002) **Review**. *Biological collections and biodiversity*. **26**: 224-226.
- O'Connor, J. P. (2005) Some **distribution** records for Irish **sawflies** (Hymenoptera: Symphyta). **29**: 127-129.
- O'Connor, J. P. (2007) A **review** of the **Ceraphronoidea** (Hymenoptera) including two species **new** to Ireland. **31**: 44-47.
- O'Connor, J. P. (2013) The caddisflies (**Trichoptera**) of Co. **Kerry**, Ireland. Part 1: records of species taken at **light**. **37**: 58-82.
- O'Connor, J. P. (2016) A **Celebration (1975-2016)**: *Bulletin* Number 40. **40**: 184-187*.
- O'Connor, J. P. (2020) Some further **distribution** records of caddisflies (**Trichoptera**) from Ireland. **44**: 138-166.
- O'Connor, J. P. (2024) **Freshwater parasitic** wasps (Hymenoptera: **Mymaridae** & **Trichogrammatidae**) from the River Inny, County Cavan, **Ireland**. **47**: 211-214.
- O'Connor, J. P. (2025) Notes on the grey silverfish *Ctenolepisma longicaudatum* Escherich, 1905 (Zygentoma; **Lepismatidae**) in Ireland. **48**: 154-157.
- O'Connor, J. P. (2025) New Irish caddisfly (**Trichoptera**) records mainly from the **EPA Rivers Survey** (2007-2018) and **Bioblitz**. **48**: 191-209.

*See also 48: 326.

- O'Connor, J. P. (2025) **Index to *Bulletins* 1-48** of the Irish Biogeographical Society. **48**: 289-324.
- O'Connor, J. P. and Ashe, P. (1992) A provisional **list** of the Irish **Diapriinae** (Hymenoptera: Diapriidae). **15**: 68-90.
- O'Connor, J. P. and Ashe, P. (2007) Contributions towards a **checklist** of **insects** feeding on Irish **trees**. Part 1: Hymenoptera, Lepidoptera and Orthoptera. **31**: 197-267.
- O'Connor, J. P., Ashe, P., O'Neill, L., Bond, K. G. M. and Murray, D. A. (1990) Records of some **insect pests** which recently caused public **concern** in Ireland. **13**: 141-165.
- O'Connor, J. P., Bond, K. G. M. and O'Connor, M. A. (2013) Some records of caddisflies (**Trichoptera**) from Co. Fermanagh including *Halesus digitatus*, *Limnephilus decipiens* and *Ceraclea fulva* **new** to **Northern Ireland**. **37**: 165-171.
- O'Connor, J. P., Bowdrey, J. P., Redfern, M. and Higginbottom, T. (2008) Records of Irish **galls** (Fungi; Insecta: Coleoptera, Diptera, Hemiptera, Hymenoptera, Lepidoptera; Acarina: Eriophyidae) including eight species **new** to Ireland and one deletion from the Irish list. **32**: 40-61.
- O'Connor, J. P. and Bryant, A. (2018) The **brackish water caddisfly** *Ylodes reuteri* (McLachlan, 1880) (**Trichoptera**: Leptoceridae) discovered in County Waterford, Ireland. **42**: 3-8.
- O'Connor, J. P., Bryant, A. and Monteith, R. (2024) **Miscellaneous** Irish caddisfly (**Trichoptera**) records. **47**: 185-194.
- O'Connor, J. P. and Buhl, P. N. (2016) A **review** of the Irish **platygastriids** (Hymenoptera: Platygastroidea, Platygastriidae) including their known distributions. **40**: 43-115.
- O'Connor, J. P. and Chandler, P. J. (2000) **Distributional** records of Irish **Diptera**. **24**: 75-110.
- O'Connor, J. P. and Davy-Bowker, J. (2014) Records of **Trichoptera** (Insecta) from **Northern Ireland**. **38**: 3-60.
- O'Connor, J. P. and Feeley, H. B. (2020) Miscellaneous Irish caddisfly (**Trichoptera**) records mainly from National River **monitoring** work. **44**: 261-269.
- O'Connor, J. P. and Feeley, H. B. (2021) Irish caddisfly (**Trichoptera**) records from National River and Lake **monitoring** work in 2021. **45**: 11-23.
- O'Connor, J. P., Feeley, H. B., Bryant, A., Sweeney, P., Monteith, R., Brophy, J. T. and Mitchell, R. (2025) Records of Irish caddisflies (**Trichoptera**) including *Oecetis testacea* (Curtis, 1834) **new** to **Northern Ireland**. **48**: 158-175.
- O'Connor, J. P., Liston, A. D. and Speight, M. C. D. (1997) A **review** of the Irish **sawflies** (Hymenoptera: Symphyta) including a checklist of species. **20**: 2-99.
- O'Connor, J. P. and Malumphy, C. (2011) A **review** of the Irish **jumping plant-lice** (Hemiptera: **Psylloidea**). **35**: 21-63.

- O'Connor, J. P. and Malumphy, C. (2020) Addendum to "A review of the Irish **jumping plant-lice** (Hemiptera: **Psylloidea**)". **44**: 114-123.
- O'Connor, J. P. and McNaughton, C. (2017) *Limnephilus hirsutus*, *Limnephilus ignavus* and *Ceraclea albimacula* (**Trichoptera**): three species new to **Northern Ireland** along with some other records from Lough na Trosk, County Antrim. **41**: 33-38.
- O'Connor, J. P. and McNaughton, C. (2017) Some new distributional records of caddisflies (**Trichoptera**) from **Northern Ireland**. **41**: 103-111.
- O'Connor, J. P. and McNaughton, C. (2019) Records of caddisflies (**Trichoptera**) from County Antrim, **Northern Ireland**. **43**: 28-36.
- O'Connor, J. P., McNaughton, C. and Langton, P. H. (2017) *Glossosoma conformis*, *Hydropsyche contubernalis* and *Agrypnia varia* (**Trichoptera**): three species of caddisfly new to **Northern Ireland**, with a **checklist** of recorded species. **41**: 39-50.
- O'Connor, J. P. and Murphy, D. (1988) Some records of Irish **Odonata** (Insecta). **11**: 35-40.
- O'Connor, J. P. and Norton, M. A. (1977) Athlone **Field Meeting**: preliminary notes on the aquatic invertebrate fauna of **Hare Island** and environs. **1**: 20-25.
- O'Connor, J. P. and Norton, M. A. (1978) Further notes on the **aquatic** invertebrates of **Hare Island** and its environs, Lough Ree, Co. Westmeath. **2**: 37-39.
- O'Connor, J. P. and Notton, D. G. (2013) A **review** of the Irish **scelionids** (Hymenoptera: Platygastroidea, Platygastriidae) including four species **new** to Ireland. **37**: 20-44.
- O'Connor, J. P. and O'Connor, M. A. (2013) Some **records** of adult **stoneflies** (Plecoptera) from Ireland. **37**: 83-103.
- O'Connor, J. P. and O'Connor, M. A. (2014) Further records of caddisflies (**Trichoptera**) from Co. Fermanagh including seven species **new** to **Northern Ireland**. **38**: 272-279.
- O'Connor, J. P. and O'Connor, M. A. (2015) Additional caddisfly (**Trichoptera**) records from County Fermanagh including *Hydroptila cornuta* and *Ceraclea senilis* new to **Northern Ireland**. **39**: 203-208.
- O'Connor, J. P. and O'Connor, M. A. (2016) Some new distributional records for Irish caddisflies (**Trichoptera**) including a species list for **Lough Neagh**. **40**: 164-183.
- O'Connor, J. P. and O'Connor, M. A. (2017) Further **distributional** and **flight-period** records for Irish caddisflies (**Trichoptera**). **41**: 51-89.
- O'Connor, J. P. and O'Connor, M. A. (2018) Records of Irish caddisflies (**Trichoptera**) including a **county list**. **42**: 75-154.
- O'Connor, J. P. and O'Connor, M. A. (2019) **New** caddisfly (**Trichoptera**) data from Ireland including records for *Hydroptila lotensis* Mosely, 1930 and *Hydroptila vectis* Curtis, 1834. **43**: 57-122.

- O'Connor, J. P. and O'Connor, M. A. (2020) Additional caddisfly (**Trichoptera**) records from Ireland including **new** records of *Oxyethira mirabilis* Morton, 1904. **44**: 19-94.
- O'Connor, J. P. and O'Connor, M. A. (2021) **New** distributional data on the caddisflies (**Trichoptera**) of Ireland. **45**: 97-124.
- O'Connor, J. P. and O'Connor, M. A. (2025) New records of Irish **sponge flies** (Neuroptera: **Sisyridae**). **48**: 98-106.
- O'Connor, J. P., O'Connor, M. A. and Feeley, H. B. (2023) **Recent** records of Irish caddisflies (**Trichoptera**). **46**: 91-108.
- O'Connor, J. P., O'Connor, M. A. and Feeley, H. B. (2024) **New** records of Irish caddisflies (**Trichoptera**) in 2014, 2021, 2022 & 2023. **47**: 64-76.
- O'Connor, J. P., O'Connor, M. A. and McNaughton, C. (2018) *Holocentropus dubius* (Rambur, 1842) **new** to **Northern Ireland** with other caddisfly (**Trichoptera**) records from the region. **42**: 22-33.
- O'Connor, J. P., O'Connor, M. A., Wistow, S. and Ashe, P. (1993) Notes on the **distribution** of *Andricus kollari* (Hartig) (Hymenoptera: Cynipidae) in Ireland. **16**: 57-61.
- O'Connor, J. P., O'Grady, M. F. and Bracken, J. J. (1986) Observations on the **Corixidae** (Insecta: Hemiptera) of the **Killarney** lakes and district. **9**: 15-26.
- O'Connor, J. P., Schönrogge, K., Ashe, P., Crawley, M. J., O'Connor, M. A., Walker, P. and Wistow, S. (1995) The **distribution** of **gall-causing cynipids** (Hymenoptera) on **oak** (*Quercus*) in Ireland. **18**: 37-65.
- O'Connor, J. P. and Thuróczy, C. (2009) Records of Irish **Chalcidoidea** (Hymenoptera) including *Torymus hederæ* (Walker, 1833) and *Torymus nitidulus* (Walker, 1833) **new** to Ireland. **33**: 3-13.
- O'Connor, J. P. and Waldren, S. (1995) A **review** of the Irish distribution of *Arctorthesia cataphracta* (Olafsen) (Hemiptera: Coccoidea). **18**: 19-21
- O'Connor, J. P., Wallace, I. D. and Sutton, R. D. (2024) An **aid** for identifying adults of *Limnephilus pati* O'Connor (**Trichoptera**: Limnephilidae). **47**: 94-116.
- O'Connor, J. P. and Wise, E. J. (2004) **Observations** on the **Trichoptera** of the Rivers Flesk and Laune, **Killarney**, Co. Kerry, Ireland. **28**: 133-142.
- O'Connor, P. G. and Jeal, F. (1985) Some notes on the **distribution** of *Bufo calamita* Laur., the **natterjack** toad in Ireland deriving from a survey conducted in 1975. **8**: 30-41.
- Oliver, G. A. and Healy, B. (1998) Records of aquatic **fauna** from coastal **lagoons** in Ireland. **21**: 66-115.
- O'Loughlin, E. F. M. (1989) Notes on the **distribution** of *Calliostoma zizyphinum* (L.) (**Mollusca**) on the shores and shallow waters of the Irish coast. **12**: 22-30.

- O'Mahony, T. (1977) Current taxonomic and distributional **research** on the genus *Rosa* in Ireland. **1**: 41-44.
- O'Mahony, T. (1979) *Inula crithmoides* L. and *Trifolium striatum* L. in the **Cork flora**. **3**: 7-10.
- O'Mahony, T. (1980) Some recent **plant finds** in the Kenmare-Kilgarvan area of south **Kerry** (H1). **4**: 41-45.
- O'Mahony, T. (1983) **Review**. *Sedges of the British Isles*. **5**: 47-50.
- O'Mahony, T. (1986) Recent records for **rare Cork plants**. **9**: 27-33.
- Oosterbroek, P. (2001) On the presence of *Tipula* (*Platytipula*) *luteipennis* Meigen (Diptera: **Tipulidae**) in **Ireland**. **25**: 218-219.
- Owen, J. A. (1997) **Beetles** (Coleoptera) recorded from various **Irish sites** in 1993, 1994 and 1996. **20**: 136-154.
- Oxbrough, A. (2008) Irish **spiders** (Arachnida: Araneae) collected during a five-year, island-wide study including **696 new county records**. **32**: 97-127.

P

- Parnell, J. (1983) An **abnormal** plant of *Digitalis purpurea* L. **5**: 28.
- Parnell, J. A. N., Wyse Jackson, P. S. and Akeroyd, J. R. (1984) The **flora** of the **Magharee Islands**, Co. Kerry (H1). **7**: 45-54.
- Parry, N. (2020) A study of the present state of an Irish colony of the **Slow Worm** (*Anguis fragilis* Linnaeus, 1758) (Squamata: Anguidae) in the **Burren**, Counties Clare and Galway 2015 - 2019. **44**: 3-18.
- Parry, N. (2023) Possible first evidence that **slow worms** (*Anguis fragilis* Linnaeus, 1758) feed on **ant** colonies. **46**: 62-66.
- Parry, N. (2024) A study of the present state of an Irish colony of the **Slow Worm** (*Anguis fragilis* Linnaeus, 1758) (Squamata: Anguidae) in the **Burren**, Counties Clare and Galway. **Addendum 2020 - 2023**. **47**: 77-93.
- Pintureau, B. (2003) Systematics and biogeography of two *Trichogramma* (Hymenoptera: **Trichogrammatidae**) species described from the **Parisian** Region, France. **27**: 165-175.

Q

- Quigley, D. T. G. (1996) **First** record of **smelt** *Osmerus eperlanus* L. from the River **Suir**, together with a review of Irish records. **19**: 189-194.
- Quigley, D. T. G. (2019) **First** records of the **Golden Redfish** *Sebastes norvegicus* (Ascanius, 1772) [*S. marinus* (non Linnaeus, 1758)] (Scorpaeniformes: Sebastidae: Sebastinae) from Irish waters. **43**: 3-16.

- Quigley, D. T. G., Cadée, G. C. and Gainey, P. A. (2024) **First** records of **Tropical Almond** *Terminalia catappa* L. (Myrtales: Combretaceae: Terminaliinae) drift mesocarps from Irish maritime shores and a review of NW European records. **47**: 117-130.
- Quigley, D. T. G., †Cotton, D., Pyne, A. and McNamara, L. (2023) **First** records of **Laurelwood** *Calophyllum* sp. (Malpighiales: Calophyllaceae) **drift** endocarps from Irish maritime shores and a review of NW European and Western Atlantic records. **46**: 26-40.
- Quigley, D. T. G., Fenwick, D. and MacNamara, L. (2018) **First** records of the **Calico Scallop** *Argopecten gibbus* (L.) and the **Transverse Ark Clam** *Anadara transversa* (Say, 1822) (Mollusca: Bivalvia) from Irish Waters. **42**: 9-21.
- Quigley, D. T. G. and Hill, R. (2015) A further record of the marine **isopod** *Idotea metallica* Bosc, 1802 in Irish waters and a **review** of the species' habitats, trophic associations and ecology in NW European waters. **39**: 222-242.
- Quigley, D. T. G. and MacNamara, L. (2021) **Blister Pod** or Cojon de Burro *Sacoglottis amazonica* Mart. (Malpighiales: Humiriaceae) drift endocarp **stranded** in County Clare on the Atlantic coast of western Ireland, and a **review** of NW European records. **45**: 24-34.
- Quigley, D. T. G., MacNamara, L. and Gainey, P. A. (2020) **First** records of **stranded Nutmegs** *Myristica fragrans* Houttuyn, 1774 (Magnoliales: Myristicaceae) on the Irish Coast and a **review** of North Atlantic records. **44**: 178-188.
- Quigley, D. T. G. and McNamara, L. (2020) **First** records of **Persian Walnuts** *Juglans regia* L. (Juglandaceae: Cardiocaryon) **stranded** on the Irish coast and a **review** of North Atlantic records. **44**: 102-113.
- Quigley, D. T. G. and Minchin, D. (2019) **First** record of a **Pecan Nut** *Carya illinoensis* (von Wangenheim) K. Koch (Juglandaceae: Hicorieae: Apocarya) **drift** endocarp from Irish waters and a **review** of NW European records of *Carya* endocarps. **43**: 37-41.
- Quigley, D. T. G. and Minchin, D. (2019) **First** record of a **stranded Black Walnut** *Juglans nigra* L. (Juglandaceae: Cardiocaryon) from Irish waters and a **review** of NW European records. **43**: 123-130.
- Quigley, D. T. G., Minchin, D., Williams, T. and Gainey, P. A. (2020) **Brazil Nuts** *Bertholletia excelsa* Humbolt & Bonpland (Lecythidaceae) **stranded** on Irish, NW European and Western North Atlantic maritime shores. **44**: 242-251.
- Quigley, D. T. G. and Moffatt, S. (2014) **Sika-like deer** *Cervus nippon* Temminck, 1838 observed **swimming** out to sea at Greystones, Co. Wicklow: increasing deer population pressure? **38**: 251-262.

- Quigley, D. T. G., Ni Churraidhin, S. and MacGabhann, D. (2017) Deep-water form of the **Devonshire Cup Coral** *Caryophyllia smithii* var. *clavus* Scacchi, 1835 (Anthozoa, Scleractinia, Caryophyllidae) in Irish waters, and a **review** of *Caryophyllia* species reported from the North East Atlantic. **41**: 3-21.

R

- Regan, E. C. and Anderson, R. (2004) Terrestrial **Coleoptera** recorded in Ireland, May 2003. **28**: 85-132.
- Regan, E. C. and Meagher, O. (2011) The **distribution** and habitat of the **pearl-bordered fritillary** butterfly *Boloria euphrosyne* (Linnaeus) (Lepidoptera: Nymphalidae) in Ireland. **35**: 150-161.
- Reynolds, J. (2000) **John Noel Robert Grainger** (1925-1995). **24**: 175-180.
- Reynolds, J. D. (1983) Notes on the Irish **distribution** of the freshwater **crayfish**. **6**: 18-24.
- Reynolds, J. D. (1985) **Invertebrates** of Irish Midlands **raised bogs**: part II. Odonata, aquatic Hemiptera, Trichoptera. **8**: 98-102.
- Reynolds, J. D. (1986) Some **invertebrates** of **Lough Roe**, Co. Offaly: a rare and endangered **bogland** habitat. **9**: 41-45.
- Reynolds, J. D. (1986) **Cladocera** from **Burren turloughs** at Mullagh More, Co. Clare. **9**: 51-54.
- Reynolds, J. D. (2001) **Robert Edmund Blackith** (1923-2000). **25**: 301-306.
- Reynolds, J. D. and Reynolds, S. C. P. (1990) Development and present **vegetational** state of **Boosterstown marsh**, Co. Dublin, Ireland. **13**: 173-188.
- Reynolds, S. C. P. and Reynolds, J. D. (1992) The **Flora** of **Foynes Island**, Co. Limerick, Ireland. **15**: 34-62.
- Roberts, S. P. M. (1998) The **status** of **social wasps** (Hymenoptera: Vespidae) in Ireland. **22**: 73-83.
- Roden, C. (1978) *Stephanosphaera pluvialis* Cohn. in Irish **solution hollows**. **2**: 32-36.
- Roden, C. (1979) A note on the **flora** of the **Lough Corrib** region including some **new** records for west Galway (H16), north-east Galway (H17) and south Mayo (H26). **3**: 34-36.
- Ronayne, C. (1998) *Ectemnius cephalotes* (Olivier) (Hymenoptera: Sphecidae), an aculeate wasp **new** to Ireland. **22**: 97-101.
- Ronayne, C. (1998) **BWARS Field Meeting** in south east Ireland, July 1999. **22**: 241-242.
- Ronayne, C. (2002) *Ammophila sabulosa* (Linnaeus, 1758) and *Bombus distinguendus* Morawitz, F., 1869 (**Hymenoptera**: Aculeata) on the **Mullet Peninsula**, Co. Mayo, Ireland. **26**: 138-142.

- Ronayne, C. (2008) The ‘**Connogh**’ and the ‘**Arglogher**’: 17th century anecdotes on natural history and folk-medicine from Co. **Westmeath**. **32**: 34-39.
- Ronayne, C. and Nelson, B. (1998) **Appeal** for records of **social wasps**. **22**: 241.
- Ronayne, C. and O’Connor, J. P. (2003) **Distributional** records of some **Aculeata** (Hymenoptera) collected in Ireland from 1980-2002. **27**: 227-254.
- Ronayne, C. and O’Connor, J. P. (2006) Further **distributional** records of Irish **Aculeata** (Hymenoptera), and a species list for Ireland. **30**: 28-91.
- Ronayne, C. and O’Connor, J. P. (2008) A short **history** of The Irish **Biogeographical Society**. **32**: 216-218.
- Ross, H. (1979) A **checklist** of Irish land and freshwater **Mollusca**. **3**: 37-46.
- Roth, S. and O’Connor, J. P. (1993) A **review** of the Irish **Nabinae** (Insecta: Hemiptera, Nabidae). **16**: 9-17.
- Rushton, B. S., Bataille, A. and Shannon, G. P. (2004) **Fungal sporocarp** production in four deciduous **woodland** sites in **Northern Ireland**. **28**: 3-30.

S

- Scannell, M. J. P. (1979) **Mrs. A. L. King** – an appreciation. **3**: 75-80.
- Scannell, M. J. P. (1983) **Michael Long** of Dingle (1899-1980) – an **appreciation**. **5**: 51-53.
- Scannell, M. J. P. (1985) **Plant lists** from the **scientific tourist** through Ireland (1818). **8**: 42-62.
- Scannell, M. J. P. (1985) Robert **Ball** and William **Thompson** – **plant lists** compiled after a visit to western Ireland in 1834. **8**: 78-90.
- Sheehy-Skeffington, M. (1978) The influence of topography on the development of **vegetation** in the **Camargue**, France. **2**: 58-62.
- Sleeman, D. P. (1979) **Epifauna** from some Ulster **mammals**. **3**: 47-50.
- Sleeman, D. P. (1980) A **checklist** and bibliography of Irish **Oestridae** and **Gasterophilidae** (Diptera). **4**: 28-29.
- Sleeman, D. P. (1997) Records of **lice** (Phthiraptera) from **stoats** and **badgers** in Ireland. **20**: 100-102.
- Sleeman, D. P., Cronin, J. N. and Jones, P. (1996) Records of **stinkhorn** fungi (*Phallus impudicus* Pers.) from Ireland, **England** and **Italy**. **19**: 148-150.
- Sleeman, D. P. and Jones, P. (2000) Further records of **stinkhorn** (*Phallus impudicus* Pers.) and dog stinkhorn (*Mutinus caninus* (Pers.)) fungi from **England**, Ireland, **Luxembourg** and **Scotland**. **24**: 168-170.
- Sleeman, D. P. and Smiddy, P. (1999) Records of **otters** *Lutra lutra* (L.) in the vicinity of Irish **badger** *Meles meles* (L.) setts. **23**: 92-97.

- Sleeman, D. P., Statham, M. and Dixon, C. (2006) Records of **otters** (*Lutra lutra* L.) and **badgers** (*Meles meles* L.) from **built-up** areas in Ireland. **30**: 3-6.
- Smiddy, P. (2000) The **status** of the freshwater **pearl mussel** *Margaritifera margaritifera* (L.) in east Cork and part of Waterford, Ireland. **24**: 153-158.
- Smiddy, P. (2002) Bird and mammal **mortality on roads** in Counties Cork and Waterford, Ireland. **26**: 29-38.
- Smyth, T. (1994) The **distribution** of freshwater **Bryozoa** in Ireland. **17**: 9-22.
- Snazell, R. (1984) Some **new** records of **spiders** (Araneae) from Ireland. **7**: 14-18.
- Somerfield, P. (1988) **New** records of **Marine Halacaridae** (Acari: Prostigmata) from rocky shores around the Irish coast. **11**: 6-21.
- Somerfield, P. (1989) **Review**. *Provisional atlas of the ticks (Ixodoidea) of the British Isles*. **12**: 155.
- Somerfield, P. (1991) Additional records of **marine Halacaridae** (Acari: Prostigmata) from Ireland. **14**: 2-23.
- Speight, M. C. D. (1977) **Athlone Field Meeting: insects** collected on and near the shores of Lough Ree. **1**: 27-36.
- Speight, M. C. D. (1977) What is a **biological record**? **1**: 48-50.
- Speight, M. C. D. (1978) A **check** list of Irish **Syrphidae** (Diptera). **2**: 26-31.
- Speight, M. C. D. (1978) A return visit to **Hare Island**. **2**: 40-41.
- Speight, M. C. D. (1978) What is a **reference** collection? **2**: 63-68.
- Speight, M. C. D. (1979) The Irish **Pallopteridae** (Diptera). **3**: 18-26.
- Speight, M. C. D. (1979) A **checklist** of the Irish **Sciomyzidae** (Diptera). **3**: 27-29.
- Speight, M. C. D. (1984) **Postglacial** Colonisation Conference, University College Cork, 15-16 October, 1983. **7**: 58-59.
- Speight, M. C. D. (1985) The **plight** of the **invertebrates** in Europe. **8**: 111-113.
- Speight, M. C. D. (1986) Work of the European **Invertebrate Survey** Committee. **9**: 55-56.
- Speight, M. C. D. (1986) Irish **grid/UTM** grid conversion **overlays** for biological recording. **9**: 65-66.
- Speight, M. C. D. (1987) The Irish **asilid** (Diptera) fauna. **10**: 56-71.
- Speight, M. C. D. (1987) **Charter** on **invertebrates**. **10**: 145-154.
- Speight, M. C. D. (1988) *Ectaetia platyscelis*, *Setisquamlonchaea setisquama* and *Suillia humilis*: insects (**Diptera**) **new** to Ireland, plus some miscellaneous Irish *Suillia* records. **11**: 22-27.
- Speight, M. C. D. (1988) The Irish **cerambycid** fauna (**Coleoptera**: Cerambycidae). **11**: 41-76.
- Speight, M. C. D. (1989) Some Irish records of the genera *Glischrochilus* and *Soronia* (Coleoptera: **Nitidulidae**). **12**: 18-21.

- Speight, M. C. D. (1989) The Irish elaterid and buprestid fauna (Coleoptera: **Elateridae** and **Buprestidae**). **12**: 31-62.
- Speight, M. C. D. (1989) The **Rosy New Zealand Flatworm**, *Geoplana sanguinea* (Moseley): a record from **West Cork** (Tricladida: Geoplanidae). **12**: 150-151.
- Speight, M. C. D. (1990) *Pyropterus nigroruber* (Degeer) in Ireland (Coleoptera: **Lycidae**), with a **key** to distinguish this beetle from related European species. **13**: 166-172.
- Speight, M. C. D. (1990) *Hippodamia 13-punctata* (Coleoptera: Coccinellidae) and other insects from **All Saints Bog**, Co. Offaly, Ireland. **13**: 200-212.
- Speight, M. C. D. (2001) **Farms** as biogeographical units: 2. The potential role of different parts of the case-study farm in maintaining its present fauna of **Sciomyzidae** and **Syrphidae** (Diptera). **25**: 248-278.
- Speight, M. C. D. (2002) Two **controversial** additions to the Irish insect list: *Microdon myrmicae* Schönrogge *et al.* and *Pipiza festiva* Meigen (Diptera: **Syrphidae**). **26**: 143-153.
- Speight, M. C. D. (2002) An annotated **list** of the **Syrphidae** (Diptera) of **Pollardstown Fen**, Co. Kildare, Ireland. **26**: 196-210.
- Speight, M. C. D. (2004) **Insect** records from the Connemara (Co. Galway) and Mayo (Co. Mayo) **National Parks**, Western Ireland. **28**: 31-60.
- Speight, M. C. D. (2005) *Platycheirus aurolateralis*, *P. scutatus* and *P. splendidus* (Diptera: **Syrphidae**) in a Co. **Dublin** garden, Ireland. **29**: 258-261.
- Speight, M. C. D. (2005) *Achalcus britannicus* (Diptera: **Dolichopodidae**) new to Ireland. **29**: 278-279.
- Speight, M. C. D. (2008) On the **arrival** in Ireland of *Sphegina sibirica* Stackelberg, 1953 (Diptera: **Syrphidae**). **32**: 90-96.
- Speight, M. C. D., Anderson, R. and Luff, M. L. (1983) An **annotated** list of the Irish **ground beetles** (Col., Carabidae + Cicindelidae). **6**: 25-53.
- Speight, M. C. D., Blackith, R. E. and Blackith, R. M. (1990) *Antichaeta brevipennis*, *Leucophenga maculata*, *Polyporivora picta* and *Tephrochlamys tarsalis* (Diptera): insects **new** to Ireland. **13**: 131-136.
- Speight, M. C. D., Chandler, P. J., Irwin, A. G. and de Courcy Williams, M. (1985) A provisional **list** of Irish **Psilidae** (Diptera). **8**: 2-12.
- Speight, M. C. D. and Gittings, T. (2006) Records of **hoverflies** (Diptera: **Syrphidae**) from counties Clare and Cork, Ireland. **30**: 334-347.
- Speight, M. C. D. and Good, J. A. (2001) **Farms** as biogeographical units: 3. The potential of natural/semi-natural habitats on the farm to maintain its **syrphid** fauna under various management regimes. **25**: 279-291.

- Speight, M. C. D. and Good, J. A. (2001) **Farms** as biogeographical units: 4. **Concept** and **reality**. **25**: 292-300.
- Speight, M. C. D. and Good, J. A. (2005) **Farms** as biogeographical units 5: the response of **Odonata** to increased habitat availability on a farm in Co. Cork, Ireland. **29**: 262-277.
- Speight, M. C. D., Good, J. A., Marnell, F., Moorkens, E. and Nelson, B. (2000) **Invertebrate** (Arachnida, Insecta, Mollusca) records from some County **Mayo** localities, Ireland. **24**: 43-68.
- Speight, M. C. D. and Nelson, B. (2000) The **changing status** of *Helophilus trivittatus* (Fabr.) (Diptera: **Syrphidae**) in Ireland. **24**: 171-174.
- Speight, M. C. D. and O'Connor, J. P. (1983) The Irish **Ptychopteridae** (Diptera). **5**: 29-37 (Figure 1 on two unnumbered pages in some issues and one unnumbered in others).
- Sweeney, P. (2005) **Distribution** of estuarine Naididae and Tubificidae (**Oligochaeta**) in Munster, Ireland. **29**: 245-257.
- Sweeney, P. (2016) The current **status** of aquatic **oligochaetes** in Ireland. **40**: 3-17.
- Sweeney, P. (2025) *Nais communis* Piguët, 1906 (**Oligochaeta**: Naididae), microhabitat and occurrence in southern Ireland. **48**: 176-182.

T

- Tierney, D., Bradley, C., Kelly-Quinn, M. and Murray, D. (2002) **Modern** records of *Hydraena minutissima* Stephens, 1829 and of *Agabus biguttatus* Olivier, 1795 (**Coleoptera**) from Ireland. **26**: 220-223.
- Tierney, D., Trodd, W. and Kelly-Quinn, M. (2005) An **update** on **blackfly** species (Diptera: **Simuliidae**) and their distributions in Irish freshwater habitats. **29**: 86-126.
- Triapitsyn, S. V. (2015) **Taxonomic** notes on *Anagrus incarnatus* Haliday and some other fairyflies (Insecta: Hymenoptera: **Mymaridae**) from the **A. H. Haliday** Collection in the National Museum of Ireland. **39**: 215-221.
- Trodd, W. R. and Kelly-Quinn, M. (2003) **New** record of *Bothrioneurum vejdoskyanum* Štolc, 1888 (Annelida: **Oligochaeta**) in Ireland. **27**: 200-201.

V

- Valentine, J., Blackith, R. E. and Blackith, R. M. (1991) *Kimosina empirica*, *Leptocera cryptochaeta*, *Spelobia clunipes*, *S. nana*, *S. talparum*, *S. palmata* and *Telomerina flavipes* (Diptera: **Sphaeroceridae**) **flies new** to Ireland. **14**: 105-108.
- Viney, M. (reprinted 2025) Life along the stream – a love story; **caddisflies** could take a prize for their variation of species [**Review**: *A catalogue and atlas of the caddisflies (Trichoptera) of Ireland*]. **48**: 287-325.

Voss, S. (2024) A **five year** study (2018-2022) of the **flora** and **fauna** of **Ballywilliam** (R909097), Ballyporeen, **Cahir**, County Tipperary, Ireland. **47**: 25-63.

W

Walshe, A. and O'Connor, J. P. (2020) The **Water-Stick** Insect *Ranatra linearis* (L.) (Hemiptera: Nepidae) **new** to County Waterford, Ireland. **44**: 95-101.

White, J. (1983) Notes on Irish vegetation: no. 1. The **vegetation** of **shingle** in Co. Louth. **5**: 1-4.

Wickenberg, M. and Reynolds, J. D. (2002) A recent Irish record of the **woodlouse** *Acaeroplastes melanurus* (Budde-Lund, 1885) (Isopoda: Porcellionidae), considered to be **extinct** in the British Isles. **26**: 60-63.

Williams, C. D., Mc Donnell, R. J., Maher, C., Mulkeen, C. J. and Gormally, M. J. (2007) Faunistic data for the genus *Tetanocera* (Diptera: **Sciomyzidae**) in the west of Ireland. **31**: 268-295.

Wisdom, R., Arroyo, J. and Bolger, T. (2011) A **survey** of the Oribatida and Mesostigmata (**Acarina**) of Irish **peatlands**. **35**: 130-149.

Wistow, S. and Ashe, P. (1997) A **first** record of *Bryonia dioica* Jacquin (Cucurbitaceae) from Co. **Tyrone**, Ireland. **20**: 103-104.

Woodcock, B. A., McCausland, K. A., Mann, D. J. and McGavin, G. C. (2004) Management of Irish oceanic blanket **bog** and its effect on **ground beetles**: implications for the conservation of the threatened *Carabus clathratus* L. (Coleoptera: **Carabidae**). **28**: 63-84.

Wyse Jackson, M. (1989) Observations on the Irish distribution of a plant with serious **public health** implications: **Giant Hogweed** (*Heracleum mantegazzianum* Sommier and Levier). **12**: 94-112.

Wyse Jackson, M. (1989) Field **excursion** to **Killakee** Woods, Co. Dublin, 11 February 1989. **12**: 149-151.

Wyse Jackson, M. B. (1988) **Review**. *The Irish Red Data Book. 1. Vascular plants*. **11**: 115-118.

Wyse Jackson, M. B. (2002) **Rayless ragwort**, *Senecio jacobaea* var. *flosculosus* Lam. And Dc. (Asteraceae), in Ireland. **26**: 161-181.

Wyse Jackson, P. (1983) *Rapistrum rugosum* (L.) All. in Ireland. **5**: 15-18.

Wyse Jackson, P. N. (1991) **Distribution** of Irish **marine Bryozoa**, together with biographical notes relating to the chief **researchers** in the group. **14**: 129-184.

Wyse Jackson, P. S. (1985) Comments on the **status** and ecology of *Simethis planifolia* (L.) Gren. in Co. Kerry. **8**: 13-18.

NOTICES



Pemberley Natural History Books was established in 1989. In 2000, we also opened a shop in Richings Park, Iver which is conveniently located close to London and Heathrow airport.

Visitors have the opportunity to browse our extensive stock of books on entomology and related natural history subjects. In addition to new, used and antiquarian books we also stock journals, scientific papers and artwork. Our stock is also available via our website.

We are always interested in purchasing books and libraries in our specialist fields, particularly antiquarian and scholarly works.

Pemberley Books publishes the *Entomologist's Monthly Magazine*. Print and online subscriptions available.

Shop opening hours

Monday - Friday: 10:00 - 17:00.

Saturday: 11:00 - 16:00.

If you are travelling far, please telephone to confirm opening times.

Contact Details

Ian Johnson

Pemberley Books, 18 Bathurst Walk, Iver, Buckinghamshire, SL0 9AZ, U.K.

Telephone: +44 (0)1753 631114

Email: ian.johnson@pemberleybooks.com

Website: www.pemberleybooks.com



Irish NATURALISTS' JOURNAL

The *Irish Naturalists' Journal* commenced publication in 1925 as successor to the *Irish Naturalist*. Two issues a year include papers on all aspects of Irish natural history, including botany, ecology, geography, geology and zoology. The *Journal* also includes distribution records, principally for cetaceans, fish, insects and plants, together with short notes and book reviews. There is an Occasional Publications series for larger contributions on specific topics.

For current subscription rates, author guidelines and all other information email irishnaturalistsjournal@gmail.com or visit our website

www.irishnaturalistsjournal.org

MEMORIES (see also “A celebration (1975-2016)” in *Bulletin* **40** (2016): 184-187).



PLATE 1. Irish Biogeographical Society, Committee Meeting in Kennedys, January 1991.



PLATE 2. Irish Biogeographical Society, Committee Meeting in Kennedys, June 2015.

PUBLICATIONS OF THE IRISH BIOGEOGRAPHICAL SOCIETY

Digital copies of all the Society's publications are now available from <www.irishbiogeographicalsociety.com>, <<http://edepositireland.ie/>>, CEDaR of the National Museums Northern Ireland and The National Biodiversity Data Centre. A list of depositories of printed publications is given on page 330.

OCCASIONAL PUBLICATIONS OF THE IRISH BIOGEOGRAPHICAL SOCIETY (A5 FORMAT)

Number 1. *Proceedings of The Postglacial Colonization Conference*

D. P. Sleeman, R. J. Devoy and P. C. Woodman (editors)

Published 1986. 88 pp.

Number 2. *Biogeography of Ireland: past, present and future*

M. J. Costello and K. S. Kelly (editors)

Published 1993. 149 pp.

Number 3. *A checklist of Irish aquatic insects*

P. Ashe, J. P. O'Connor and D. A. Murray

Published 1998. 80 pp.

Number 4. *A catalogue of the Irish Braconidae (Hymenoptera: Ichneumonoidea)*

J. P. O'Connor, R. Nash and C. van Achterberg

Published 1999. 123 pp.

Number 5. *The distribution of the Ephemeroptera in Ireland*

M. Kelly-Quinn and J. J. Bracken

Published 2000. 223 pp.

Number 6. *A catalogue of the Irish Chalcidoidea (Hymenoptera)*

J. P. O'Connor, R. Nash and Z. Bouček

Published 2000. 135 pp.

Number 7. *A catalogue of the Irish Platygastroidea and Proctotrupoidea (Hymenoptera)*

J. P. O'Connor, R. Nash, D. G. Notton and N. D. M. Fergusson

Published 2004. 110 pp..

Number 8. *A catalogue and index of the publications of the Irish Biogeographical Society (1977-2004)*

J. P. O'Connor

Published 2005. 74 pp.

Number 9. *Fauna and flora of Atlantic islands. Proceedings of the 5th international symposium on the fauna and flora of the Atlantic islands, Dublin 24 -27 August 2004.*

Edited by T. J. Hayden, D. A. Murray and J. P. O'Connor

Published 2006. 213 pp.

Number 10. *A catalogue of the Irish Ichneumonidae (Hymenoptera: Ichneumonoidea)*

J. P. O'Connor, R. Nash and M. G. Fitton

Published 2007. 310 pp.

Number 11. *A catalogue and atlas of the caddisflies (Trichoptera) of Ireland*

James P. O'Connor

Published 2015 in association with The National Museum of Ireland. 656 pp.

Number 12. *Chironomidae (Diptera) of Ireland – a review, checklist and their distribution in Europe*

Declan A. Murray, James P. O'Connor and Patrick J. Ashe

Published 2018 in association with University College Dublin and the Environmental Protection Agency. x+404 pp.

Number 13. *Atlas of the Irish Trichoptera (Caddisflies)*

James P. O'Connor

Published 2021 in association with the Environmental Protection Agency. 168pp.

Number 14. *Bibliography of Irish insects (1802-2020)*

James P. O'Connor

Published 2023 in association with CEDaR, National Museums NI. 570pp.

Number 15. *A World Catalogue of Chironomidae (Diptera) Part 4. Fossil Chironomidae*

†Patrick J. Ashe, Declan A. Murray and James P. O'Connor

Published 2024. 244 pages.



OCCASIONAL ELECTRONIC PUBLICATIONS OF THE IRISH BIOGEOGRAPHICAL SOCIETY

Number 1. *A National Grid Atlas of the Irish Caddisflies (Trichoptera)*

James P. O'Connor

Published 1 June 2020.

Number 2. *Bibliography of Irish Insects (1802-2020)*

James P. O'Connor

Published 28 February 2023.



MACRO SERIES OF THE IRISH BIOGEOGRAPHICAL SOCIETY (A4 FORMAT)

First Supplement to A Bibliography of Irish Entomology

James P. O'Connor, Patrick Ashe and John Walsh

Published in association with The National Museum of Ireland. 2005. 186 pp.

An annotated checklist of the Irish butterflies and moths (Lepidoptera)

K. G. M. Bond, R. Nash and J. P. O'Connor

Published in association with The National Museum of Ireland. 2006. 177 pp.

An annotated checklist of the Irish two-winged flies (Diptera)

Peter J. Chandler, James P. O'Connor and Robert Nash

Published in association with The National Museum of Ireland. 2008. 261 pp.

An annotated checklist of the Irish Hymenoptera

James P. O'Connor, Robert Nash and Gavin Broad

Published in association with The National Museum of Ireland. 2009. 211 pp.

A world catalogue of Chironomidae (Diptera). Part 1. Buchonomyiinae, Chilenomyiinae, Podonominae, Aphroteniinae, Tanypodinae, Usambaromyiinae, Diamesinae, Prodiamesinae and Telmatogetoninae

Patrick Ashe and James P. O'Connor

Published in association with The National Museum of Ireland. 2009. 445 pp.

Second Supplement to A Bibliography of Irish Entomology

James P. O'Connor

Published by The Irish Biogeographical Society. 2012. 186 pp.

An annotated checklist of the Irish Hemiptera and small orders

James P. O'Connor and Brian Nelson

Published by The Irish Biogeographical Society. 2012. 160 pp.

A World Catalogue of Chironomidae (Diptera) Part 2. Orthocladiinae

Patrick Ashe and James P. O'Connor

Published in association with the National Museum of Ireland. 2012. Two volumes (Sections A and B). xvi + 968 pp.



BULLETIN OF THE IRISH BIOGEOGRAPHICAL SOCIETY (A5 FORMAT)

A total of 48 volumes have been published.

DEPOSITORIES

From 2001 onwards, the Editor (J. P. O'Connor) has sent printed copies of the *Bulletin* and other publications of the Irish Biogeographical Society to the depositories listed below. Digital copies of all the Society's publications are now available from <www.irishbiogeographicalsociety.com>, <<http://edepositireland.ie/>>, CEDaR of the National Museums Northern Ireland and The National Biodiversity Data Centre. It is planned to make these digital copies widely available in many of the depositories listed below.

AUSTRALIA

Museum Victoria, Natural History Section, Museum Library, Melbourne VIC 3001, Victoria.

GERMANY

Entomologisches Museum, Humboldtstr. 13, D-95168 Markt-leuthen.

Kreis Nürnberger Entomologen –galathea c/o Dr Klaus Mandery, Biodiversitätsszentrum Ebern/Hassberge, Geschwister-Scholl-Str. 6, D-96106 Ebern.

Senckenberg, Deutsches Entomologisches Institut, Entomologische Bibliothek, Eberswalder Strasse 90, 15374 Müncheberg.

Senckenberg Research Institute and Natural History Museum Frankfurt, Senckenberganlage 25, 60325 Frankfurt am Main.

Zoologische Staatssammlung, Bibliothek/exchange R. Teschner (Ms), Zoologische Staatssammlung München, Bibliothek, MünchhausenstraBe 21, D-81247 Munechen 60.

GREAT BRITAIN

British Entomological and Natural History Society, Denton Pastures County Park, Davis Street, Hurst, Reading, Berkshire RG10 0TH.

British Library, Boston Spa, Wetherby, West Yorkshire, LS23 7BQ.

CAB International, P.O. Box 100, Wallingford, Oxon OX10 8DE.

Cambridge University Library.

Legal Deposit Office, The British Library, Boston Spa, Wetherby, West Yorkshire LS23 7BY.

Manchester Museum, Oxford Road, Manchester M13 9PL.

National Library of Scotland.

National Library of Wales.

National Museums and Galleries on Merseyside, Liverpool Museum, William Brown Street, Liverpool, L3 8EN.

Oxford University Museum of Natural History, Hope Entomological Collections, Parks Road, Oxford OX1 3PW

Oxford University, The Bodleian Library.

The Freshwater Biological Association, The Ferry Landing, Far Sawrey, Ambleside, Cumbria
LA22 0LP

The Natural History Museum, Department of Library and Information Services, Cromwell
Road, London SW7 5BD.

The Royal Entomological Society, The Library, The Mansion House, Chiswell Green Lane, St
Albans AL2 3NS.

IRELAND

CEDaR, National Museums Northern Ireland, 153 Bangor Road, Cultra, Holywood, County
Down BT18 0EU.

Entomology library c/o Dr Aidan O’Hanlon, Curator of Entomology, Natural History Division,
National Museum of Ireland - Collections Resource Centre, Balheary Road, Swords, Co.
Dublin K67 D2X5 (**full set of publications**).

Environmental Protection Agency, EPA Headquarters, PO Box 3000, Johnstown Castle Estate,
Co. Wexford.

Irish Copyright Agency, c/o The Library, Trinity College, College Street Dublin 2.

National Museum of Ireland - Collections Resource Centre, Balheary Road, Swords, Co. Dublin
K67 D2X5 (**full set of publications**).

National Museum of Ireland - Natural History, Merrion Street, Dublin 2, D02 F627(**full set of
publications**).

National Parks and Wildlife Service, Dublin.

National University of Ireland Galway, James Hardiman Library, University Road, Galway.

National University of Ireland Maynooth, The Library, Maynooth, Co. Kildare.

Queen’s University Belfast, The McClay Library, 10 College Park, Belfast BT7 1LP.

Royal Dublin Society, The Library, Merrion Rd, Ballsbridge, Dublin 4, D04 AK83 (per
Professor. D. A. Murray).

Royal Irish Academy, The Library, 19 Dawson Street, Dublin 2.

Sherkin Island Marine Station, Sherkin Island, Co. Cork.

The National Biodiversity Data Centre, Beechfield House, Carriganore WIT West Campus, Co.
Waterford.

The National Library of Ireland, Kildare Street, Dublin 2 (**full set of publications**).

Trinity College Library, College Street, Dublin 2.

Ulster Museum, Botanic Gardens, Belfast BT9 5AB.

University College Cork, Boole Library, College Road, Cork.

University College Dublin, Main Library, Belfield, Dublin 4.

University of Limerick, Glucksman Library, Plassey Park Rd, Sreelane, Castletroy, Co.
Limerick.

ITALY

Museo Civico di Storia Naturale “Giacomo Doria”, via Brigata Liguria N. 9, I-16121 Genova.

JAPAN

Gunma Museum of Natural History, 1674-1, Kamikuroiwa, Tomioka, Gunma 370-2345.

LATVIA

University of Latvia, Faculty of Biology, 4 Kronvalda Str., Riga, LV 1842.

NORWAY

University Museum of Bergen, The Natural History Collections, P.O. Box 7800, N-5020 Bergen.

POLAND

Museum and Institute of Zoology, Polish Academy of Sciences, Library, Wilcza Str. 64, PL - 00-679 Warszawa.

PORTUGAL

Universidade de Lisboa, Departamento de Zoologia e Antropologia, Faculdade de Ciencias, P-1700 Lisboa.

RUSSIA

Zoological Institute, Russian Academy of Sciences, Universitetskaya nab. 1, St Petersburg 199034.

SPAIN

Universidad de Granada, Facultad de Ciencias. Biblioteca. 18071 Granada.

THE NETHERLANDS

The Netherlands Entomology Society, Naturalis Biodiversity Center, NEV Library, Postbus 9517, 2300 RA Leiden.

THE UKRAINE

Ukrainian Entomological Society, Department of Taxonomy of Entomophagous Insects and Ecological Principles of Biological Control, Institute of Zoology of Ukrainian Academy of Sciences, Kiev-30, Bogdan Khmelnytsky Street 15, 252601.

Bulletin of the Irish Biogeographical Society **Number 48** (2025)

The United States of America

American Museum of Natural History, Department of Library Services, Central Park West at
79th St., New York, NY 10024.

Smithsonian Institution Libraries, Washington, DC 20013-7012.

ISSN 0032-1185

Grehan Printers, Dublin 2, Ireland